

A black and white photograph of a construction site. In the background, a large, rugged rock wall rises. In the foreground, there is a pile of rubble and debris. Several pieces of heavy machinery, including what appears to be a drilling rig, are visible. A worker in a hard hat is standing near the machinery on the right side of the frame. The overall scene depicts a major engineering project, likely dam construction.

Contractors and Engineers

magazine of modern construction

FEBRUARY 1959

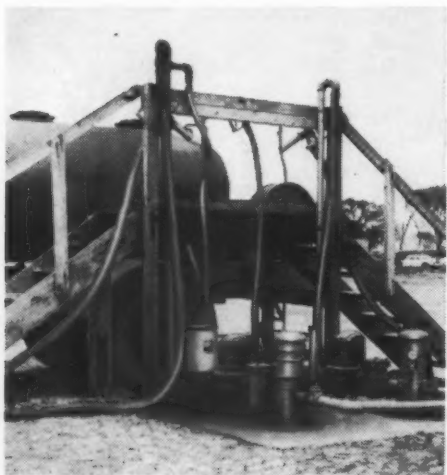
A Buttenheim Publication

Drilling for powerhouse Page 22

SEEPAGE WATER EFFICIENTLY CONTROLLED ON NEW \$700,000,000 NIAGARA POWER PROJECT



These engine-driven Marlow self-priming pumps operate on a 24-hour schedule in the trench excavation to control seepage water and keep it workable.



A tank truck which carries fuel to on-the-job vehicles and equipment is being filled by a Marlow vertical self-priming pump at a temporary loading rack.

Marlows Operate Day and Night to Keep Conduit Trenches Workable

Four of the major contracts of the giant new Niagara Power Project are for the construction of a \$141,000,000 four-mile-long conduit waterways system. Before beginning construction, trenches were dug in four separate contract sections to accommodate two reinforced concrete conduits, measuring 46 feet wide and 66 feet high. These conduits will carry water from an intake on the upper Niagara north to the Tuscarora Pumping and Generating Plant.

When excavation was begun on Section I of the waterways, a cofferdam was built at the intake location three miles above the Falls to hold back water until the work was completed. When seepage became a serious problem, Merritt-Chapman & Scott Corporation installed big Marlow self-priming contractor's pumps to keep the

area workable. On another section of the waterways project, Gull Contracting Company and L. G. Defelice and Son, Incorporated, used Marlow Model 6E4 self-priming pumps in the trenches. Operated to carry water up and over a 75 foot embankment, these pumps have a capacity of 90,000 G.P.H. on continuous service.

In addition to a complete line of AGC rated self-priming centrifugal pumps, Marlow also builds the famous "Mud-Hog" diaphragm pump that handles muddy and trash-laden liquids. All these pumps are readily available from any of the strategically located Marlow plants. Look for the heading "Marlow Pumps" in the "yellow pages" of your classified telephone directory, or ask your Marlow dealer about the line of contractor's pumps.



MARLOW PUMPS®

DIVISION OF BELL & GOSSETT COMPANY
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magazine of modern construction



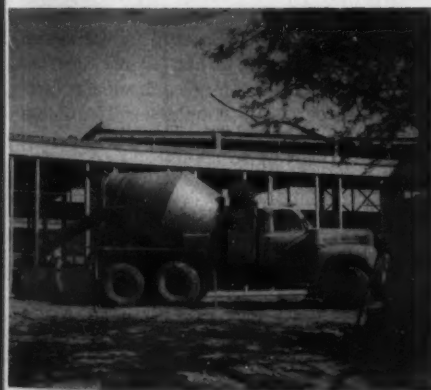
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From the meadows— a metropolis

Current considerations on reclaiming nearly 30,000 acres of New Jersey meadowlands, just across the Hudson River from New York City, are providing a challenge for engineers both home and abroad. The very word "reclamation" stirs the pulse of the builder. When it is applied to an area bigger than Manhattan, and within sight of the Empire State Building, it signifies that the frontiers of technical progress are not necessarily off on some distant horizon, but can lie right in your own backyard.

These acres of waste land cannot even be used as a backyard in their present primeval state. What Jerseyites euphemistically call the meadows, Georgians or Louisianians would consider to be marshes; New Yorkers term them swamps. No matter the name; this good-size area, stretching 18 miles from Englewood to Elizabeth, is within the periphery of the densest metropolitan area in the world. Through this flat, soggy barren flow the sluggish, tidal Hackensack and Passaic rivers on their way to Newark Bay. The highly compressible soil beneath the brownish grasses and cattails is a soft silt and clay, which extends to a depth of a hundred feet or more before a firm bottom is encountered. Average elevation is at, or below, the normal level of high tide.

Here and there across the meadows the hand of man has turned small portions of this desolate table into usable ground. But this has been done at considerable expense, and with no regard to an over-all plan. Long tan-

gents of earth embankments carry the many railroads and highways serving the great metropolis. Yet the sea of stalks and weeds that these arteries of transportation bisect has remained a monotonous waste.

Engineers are now discussing methods of draining the meadows, a section at a time, and controlling the tidal action of the rivers. Some propose the simple method of dumping in enough borrow until the silty sensitive clays have been replaced by suitable material—a slow and costly procedure. Others suggest the building of dikes or levees containing tidal gates, plus a system of pumps to unwater the enclosed area. One group points to the successful use of sand drains in constructing portions of the New Jersey Turnpike and other major highways through the meadows, and advocates similar techniques on a larger scale.

Dutch reclamation engineers have come from The Netherlands to study the Jersey site. One plan, under advisement for lowering the water table, proposes to block the tidal flow of the Hackensack with a cutoff dike and to build a navigation lock and drainage

sluices. With the water pushed back, land fill would be placed behind the levees until the entire area is raised in elevation. Having experienced a long history of the successful establishment of fertile polders from salt-water bottoms and mud flats, the Dutch technicians give assurances of the feasibility of the project. Their countrymen have participated in the reclamation of much of their nation from the sea, and they were surprised that the Jersey meadows had not been filled in long before now.

The need for more land in the New York metropolitan area is constantly growing. Its urban centers are now heavily populated. As happens time and time again, necessity is the moving force behind this challenging piece of reclamation. It is gratifying that a start has been made on the project. It is just as important that the various pieces of land to be reclaimed should not be considered as separate jobs, but as parts of the entire 30,000-acre main tract. Obviously, the entire area cannot be developed at one time, but the reclamation of each separate section certainly should be fitted into a general plan for the entire area.



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Gardner-Denver Air Tool drills with Brunner & Niv Rok-Bits drill 2-inch holes into granite for the power house footing excavation at the Fremont Canyon Power Project near Casper, Wyo. Page 21

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MART

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CONTRACTORS AND ENGINEERS

Tunneling crews beat job schedule on new Hawaiian tube

Using lightweight rock drills equipped with Sandvik Coromant integral chisel-bit steels, crews are completing—ahead of schedule—the new 2,778-foot highway tunnel through the Koolau Mountain Range on Oahu Island in Hawaii.



When work started on the new 2,778-foot vehicular tunnel for Hawaii's Oahu Island, the poor nature of the ground and adequate ventilation loomed as the biggest job problems. Despite them, the joint-venture contractors—E. E. Black Ltd., Honolulu, and Gibbons & Reed of Salt Lake City—expect to beat the June completion date.

The new tunnel parallels the John H. Wilson tunnel, and the twin bores will help to halve travel time between Honolulu and the Kaneohe Bay area on the east side of the island.

Modified horseshoe

The \$3,845,352 tunnel, a modified horseshoe bore with rough excavation dimensions of 34 feet in width and 28 feet in height, goes through a soft volcanic formation made up of basalt, cinders, ashes, and similar residues. Crews worked two headings simultaneously. Those at the Honolulu end drove a top pilot drift and wall-plate drifts before opening the top heading enough so that steel ribs and timber lagging could be placed. This done, the core was removed. Support steel was kept within a foot of the heading.

Other crews working from the Kaneohe portal found varying rock conditions. Full steel sets were required for the first 70 feet; for the next 1,500, they drove a conventional full top heading unsupported. Lightweight jackleg rock drills are used on the job, and the joint venture has standardized on 1-inch Sandvik Coromant integral chisel-bit steels supplied by Atlas Copco Pacific.

Ventilation

Ventilation, which posed some problems for the contractors, was improved when a 7 x 6-foot pilot drive was driven at the 400-foot mark to a point about halfway through, intersecting with a cross-cut shaft from the original tunnel, which runs parallel to the new one. This cross-cut shaft also enabled drilling crews to start footing drifts toward the Honolulu portal, through one of the poorest sections of ground. Major air requirements are supplied by an Atlas Copco AR-3 compressor delivering 675 cfm.

As soon as excavation permitted, concrete lining was done. The finished dimensions of the tunnel will be 29 x 21½ feet. Clearance will be a standard 15 feet.

THE END



Newest Asphalt turnpike

Virginia's 36-mile Richmond-Petersburg toll road



View of 4.8 mile section at south end of turnpike. Texaco Asphaltic Concrete, laid in five courses, provides a 9½-inch foundation and wearing surface. Contractors—Villa Contracting Company, Westfield, N. J. and Short Paving Company, Inc., Petersburg, Va.

Virginia's newly completed turnpike represents another important link in the Interstate Highway System. It is part of Interstate Route 95.

From Richmond to Petersburg, this major traffic artery has a heavy-duty, flexible Asphalt pavement. Competitive bids were received on Asphalt and rigid pavement of comparable design for sections of this toll road. As a result, Asphalt again demonstrated its lower cost and the substantial saving it makes possible in the construction of Interstate Highways, toll roads and other main traffic arteries.

Briefly, the Virginia toll road's pavement consists of a 2-inch wearing surface of fine aggregate, plant-mixed Asphaltic Concrete; a 7½-inch base of coarse aggregate, plant-mixed Asphaltic Concrete laid in three courses; and an 11-inch subbase of select borrow material.

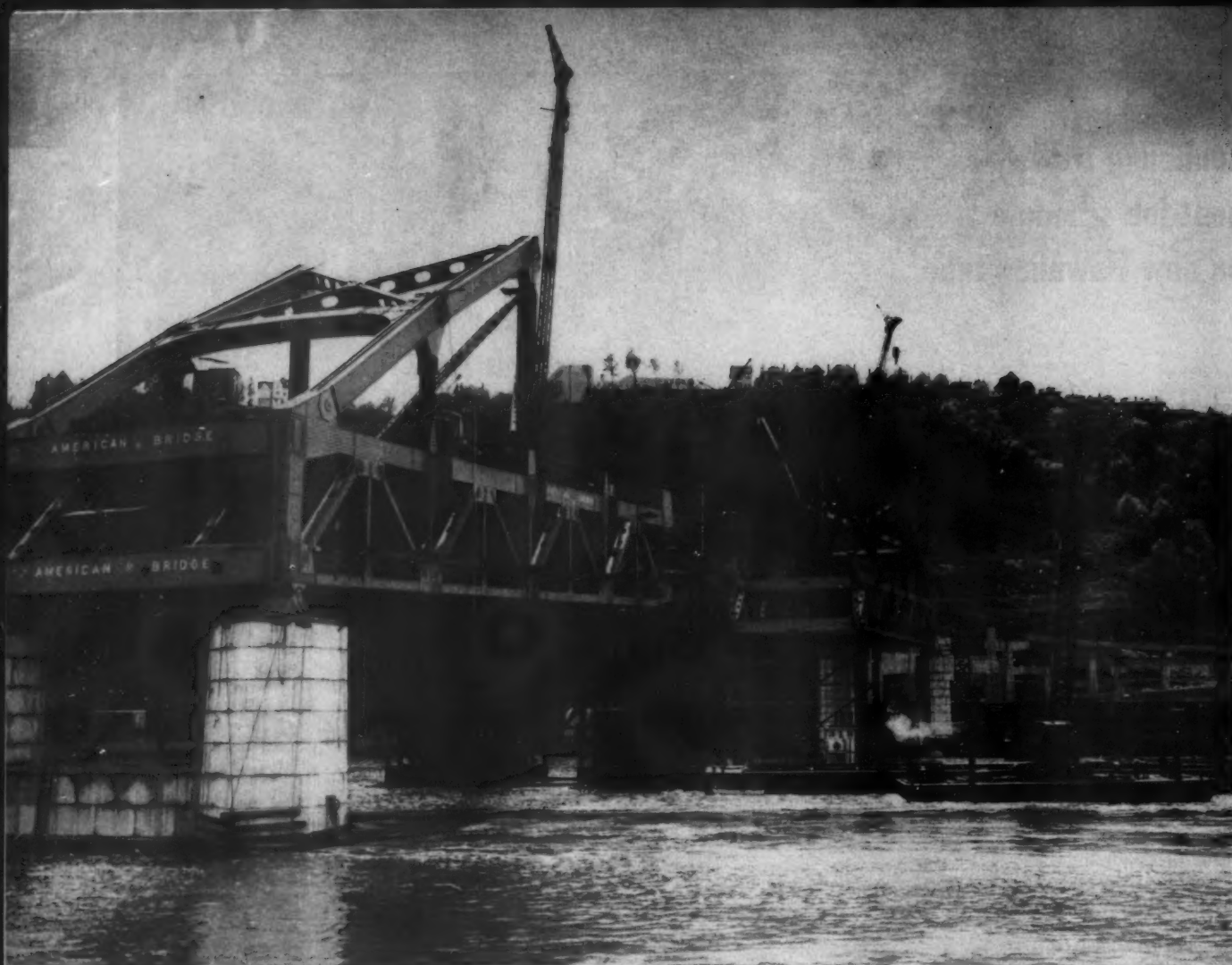
Helpful information on the type of Asphalt pavement constructed on the Richmond-Petersburg Turnpike, as well as other Asphalt types, is supplied in the brochure, "Plant-mixed Texaco Asphalt Paving". Write our nearest office for a copy.

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17
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TEXACO ASPHALT

For more facts, use Request Card at page 18 and circle No. 202



Two 150-ton-capacity travelers with 130-foot booms, plus a 150-ton-capacity stiffleg derrick on a 90-foot platform carried by a pair of barges, erect the tied-arch span of the Fort Pitt Bridge in downtown Pittsburgh. This will link the Golden Triangle area with the Fort Pitt Tunnel, one of

the portals of which can be seen at the base of Mount Washington. Ramps in the background will service the existing boulevard. The Manitowoc crane on the barges was used to assist with lifts and to drive piling to support posts of the falsework bents.

Regular methods and a new type of bridge

*Travelers and floating derrick
handle lifts for tied-arch span*

by ANTHONY N. MAVROUDIS
field editor

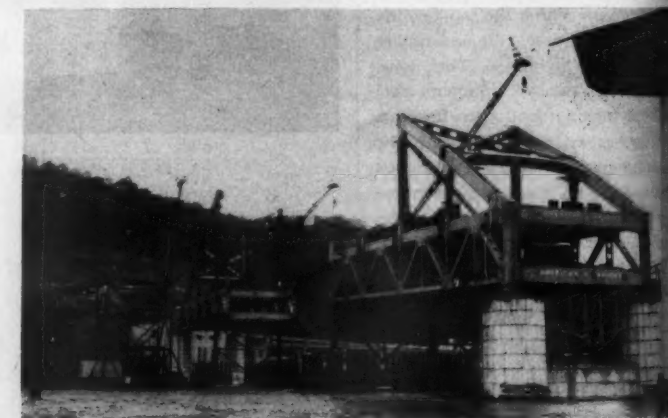
The first bridge of its kind—a double-deck, 2-hinged tied arch having stiffening trusses as the ties—did not present too many unusual problems to the experienced bridge builders of the American Bridge Division of United States Steel Corp., the superstructure contractor.

The structure is the new Fort Pitt Bridge, now nearing completion, which will form an important link between the east and west Penn-Lincoln parkway systems in Pittsburgh, Pa.

Crossing the Monongahela River

from Pittsburgh's Golden Triangle to the Fort Pitt Tunnel on the opposite side of the river, the bridge will carry traffic one way on each of its two levels. The tunnel, bored through Mount Washington, provides the remaining link between the two parkway systems. (See "Tight Construction Schedule Pushes Rock-Tunnel Project," C&E, January, 1958, page 34.)

A second bridge, similar to the Fort Pitt structure and to be known as the Fort Duquesne Bridge, is being built across the Allegheny River on the op-



Falsework bents located 200 feet from the main river piers support a portion of the arch ribs and stiffening truss that acts as a tie. One of the two levels of the bridge will be supported by the top chord of the 25-foot-deep truss; the bottom chord supports the other roadway.

posite side of the Golden Triangle. This bridge will be part of a major route to the area northwest of Pittsburgh, a route that will ultimately be connected to the Pennsylvania Turnpike.

Tied-arch span

American Bridge used two travelers, each with a 150-ton capacity and a 130-foot boom, to erect the tied-arch-span steel between the main river piers. Assisting the travelers was a third 150-ton stiffleg derrick on a 90-foot steel platform that was mounted

on a pair of 34x110-foot barges.

The piers, 752 feet on centers, required three steel falsework bents each to support the steelwork, which progressed simultaneously from each pier toward the center. The first falsework bents were placed 50 feet from the piers; the second, 100 feet; and the third bents were located 200 feet from the piers. After these bents were completed, the previously placed supports were removed.

The last bents were built and kept in place until the entire 8,400 tons of steel was erected for the main

CONTRACTORS AND ENGINEERS

span. A barge-mounted Manitowoc crane, equipped with a McKiernan-Terry C-5 hammer, was used to drive 75-foot-long 12-inch H-piles to rock in order to support the posts of the falsework bents. The driven piles were then caged and topped with the built-up steel grillages made of 36-inch I-beams. These grillages supported a pair of posts, making up each falsework bent. The posts, of three 36-inch I-beams, were formed by riveting the flanges of an I-beam to the webs of the other beams.

Two 1,500-ton hydraulic jacks were positioned over each bent post to allow the contractor to raise the steelwork and permit the removal of the previously placed intermediate bents.

These jacks were later used to lower the erected steel and effect an easy closure of the arch span. Two 500-ton hydraulic jacks, placed on either side of the bottom chords of the ties, were used to assist in the closure of this 25-foot-deep truss. The travelers erected the 76 to 84-ton box-girder sections making up the two arch ribs. These ribs are about 5 feet deep and are hinged only at the spring line. This is the first time that box girders have been used to form arch ribs. Another unique feature of the arch span is the use of the stiffening truss as the tension tie. This eliminates the horizontal thrust on the piers. There are 14 hangers, spaced on 50-foot centers, consisting of four 3 1/2-inch-diameter cables.

During erection of the arch ribs, temporary steel posts were positioned on the stiffening truss to support the rib sections. These were later replaced by the permanent cable hangers. Prefabricated steel members for the arch span were barged to the site from U. S. Steel's Ambridge, Pa., plant, 18 miles downstream on the Ohio River. The steel was picked up directly from the barges by the travelers or the floating stiff derrick. All the derricks were powered by Clyde hoists.

American Bridge used 1 1/4-inch-diameter rivets, driven by air hammers powered by Chicago Pneumatic and Ingersoll-Rand 600-cfm air compressors, to make connections on the arch span. High-strength bolts were used on the approaches.

Approach-steel erection

Over 18,000 tons of approach-span steel was required to complete the links to the parkway skirting the shore line along the Golden Triangle and to the 2-level portal of the Fort Pitt Tunnel. This southern bridge approach to the tunnel will span Pennsylvania Railroad tracks, P&LE tracks, and the Carson Boulevard trolley tracks, as well as 12 tracks of the New York Central railroad.

A large percentage of this approach steel was placed by a P&H 35-ton truck crane working adjacent to the tracks with its 70-foot boom. Steel was shipped directly to the erection site by rail cars. American Bridge is using a Browning 150-ton locomotive crane equipped with a 100-foot jib to erect the steel across the New York Central main lines. There are four main lines and eight yard tracks to

(Continued on next page)

Northern approach-span steel follows the shore of the river. The approach superstructures consist of four built-up steel girders, spaced approximately 9 feet apart to support the 24-foot roadways.



Special report to Caterpillar owners:



Parts you can trust. Dependable, round-the-clock service.

PROOF OF THE DIFFERENCE IN THE CAT "HI-ELECTRO" HARDENED CUTTING EDGE

Whether loading scrapers or bulldozing, the cutting edge takes more punishment than any other part of the machine—more punishment today than ever before. New, larger, more powerful machines put greater demands on cutting edges. And the edge that's holding up best and lasting the longest is the Cat "Hi-Electro" hardened cutting edge—the edge with the difference. From all over the country, documented results from on-the-job comparative tests with other makes of edges confirm this fact. The best buy is the Cat edge.



ROUGH JOBS like this put cutting edges to severe tests. And here is where tough Caterpillar edges prove their superiority.

Field tests prove that the edge with the difference, the Cat cutting edge, not only outwears other make edges of the same thickness; it even outlasts the thicker edges of other manufacturers. The reason: Caterpillar engineers perfected a hardening process to give steel the right blend of toughness and hardness—toughness to prevent breaking, hardness to prevent bending and rapid wear.

Quality edges start with quality steel, tested in Caterpillar's laboratories for the right chemical composition and physical characteristics. Only steels meeting these exact specifications are accepted, and further tests are made at every stage of production.

CROSS SECTION of edge showing armor-like case and its shock-absorbing core.

NOW AVAILABLE—NEW MULTI-SECTION 'DOZER EDGES

New multi-section 'dozer edges developed by Caterpillar for the D8 and D9 show the way to reduced blade costs and easier blade changing. Reduced blade costs can result from piece-by-piece replacement. You can now reverse and replace the worn sections. Changing is easier than ever before.

Service tip: When installing new or reversing "Hi-Electro" hardened edges, clean all dirt from the matching surfaces. Be sure that all bolt heads are properly drawn in to their holes and correct nut torque applied. This assures proper cutting edge support and maximum strength.

Your Caterpillar dealer has the complete story on the advantages of using the new Cat multi-section 'dozer edges. He backs you with dependable, round-the-clock service and parts you can trust. See him today!



NEW EDGES are now available for the D8 Bulldozer in left and right sections shown here. New edges for the D9 come in left, center and right sections.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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(Continued from preceding page)

be spanned. The longest girders on this approach are the ones spanning the main lines; they are about 158 feet long. The heaviest lift made by the locomotive crane was 78 tons and was located across the yard tracks.

This approach work required the locomotive crane to be shifted between different tracks in order to handle the lifts as steel was shipped to the site.

The erection of the northern bridge approach spans was handled by the floating stiffleg derrick, since this approach runs along the shore line. The longest girders to be positioned for this approach were 177 feet long. They were fabricated and cantilevered in pairs over a 140-foot pier span.

The approach superstructures consist of four built-up steel girders, 5 and 6 feet deep, spaced about 9 feet apart to support the 24-foot roadways. Each girder forms a simple span by having one end supported on a rocker and one end fixed. In order to level the steel rocker plates, American Bridge used three layers of canvas painted with red-lead paste under the plates.

All the connections on the approach steel were made with $\frac{7}{8}$ and 1-inch Russell, Burdall & Ward high-tension bolts. American Bridge used Chicago Pneumatic impact wrenches, which can be adjusted to any desired torque. Wrenches were calibrated and checked every morning before work started. The torque used was 37,000 foot-pounds. One Chicago Pneumatic 365-cfm air compressor supplied the air for the impact wrenches.

Personnel

V. A. Vogel is the superintendent on the arch span and C. N. Haney, the superintendent for the approaches, for American Bridge. George S. Richardson, consulting engineer, designed the unique bridge for the Pennsylvania Department of Highways. Leonard J. Curran is the district engineer supervising the project for the department.

THE END

Thew builds new facility to aid training program

A new training facility has been built at the Thew Shovel Co.'s Elyria, Ohio, plant, to provide trainees in the firm's Factory Service School with field-simulated experience on Thew's complete line of Lorain power shovels and cranes. The school, open to servicemen in the company's distributor outlets here and abroad, extends over a six-month period and offers 2-week general courses, one-week advanced courses, and two weeks of instruction for the incoming serviceman. The newly formed Thew Marketing Division is in charge of the program.

Bethlehem Steel change

The New York District uptown office of the Publications Department of Bethlehem Steel Co. has moved to Room 3307, 375 Park Ave., New York City. The downtown office remains at 25 Broadway.

Names in the news



E. D. Hoekstra, manager of industrial relations for Mid-Valley Utility Constructors, Inc., Houston, Texas.

Mid-Valley Utility names Hoekstra for new post

E. D. Hoekstra has joined Mid-Valley Utility Constructors, Inc., industrial builders and engineers of

Houston, Texas. Hoekstra has been appointed to the newly created position of manager of industrial relations. In addition to handling labor relations, he will head the company's public-relations program. For the past 12 years, Hoekstra had been associated with The H. K. Ferguson Co., Cleveland engineering and construction firm.

Leonard Construction news

Marvin R. Paulus has been elected president and chief executive officer of Leonard Construction Co., Chicago, Ill. He replaces C. F. Keife, who resigned as president but remains with the firm in a consulting capacity. R. A. Peters, former construction manager, is now executive vice president.

Gen. MacDonnell named to two special boards

Brig. Gen. Robert G. MacDonnell, division engineer of the U. S. Army Corps of Engineers' South Pacific Division, has been named president of the California Debris Commission and a member of the Beach Erosion Board. These two special boards were created by Congress for engineering study and factual determination of matters of interest to California and the nation.

The California Debris Commission regulates hydraulic-mining operations in the Sacramento-San Joaquin River drainage areas to prevent debris from being carried into navigable waters or otherwise causing damage. The board also studies and reports



White Oak Excavators meet the deadline at Hogback Dam:

Texaco Plan lets White Oak lubrig

Contractor reports Texaco Simplified Lubrication Plan



THESE SIX TEXACO LUBRICANTS, shown here with White Oak Excavators' Vice President, John Toffolon, and H. F. Parier, Texaco representative, permit their rig to lubricate all major equipment.

RIVERTON, CONN.—White Oak Excavators, contractors for Connecticut's Hogback reservoir dam, found that the Texaco Simplified Lubrication Plan on their truck-mounted lube rig more useful than ever before. "The Texaco Plan is really essential to getting the use of our lube rig," says John Toffolon, one of White Oak Excavators owners. "Our Texaco Plan calls for six lubricants to handle everything on the spread. We take our whole lubricant inventory right out into the field. That's especially important to us because we use equipment made by practically every manufacturer."

Using no more than six lubricants on this \$4,225 project has other advantages, too. For example, the inventory (six lubricants instead of 15 or 20) means

on plans, related to hydraulic mining, to improve channel navigation, river-bank protection, and flood control.

The Beach Erosion Board plans and designs shore-protection works along the Great Lakes, the U. S. coast line, and the shores of territorial possessions.

County division names

The St. Louis County Division of Highways, Clayton, Mo., has appointed Lee C. Phalen office engineer of the division. In his new post, Phalen will be in charge of surveys and the preparation of plans for highway improvements financed with road and bridge tax funds. He will also assist the highway engineer in preparation of engineering reports, etc.

PCA promotes three

Warren G. Burres, former personnel training manager, has been promoted to district engineer of the Los Angeles office of the Portland Cement Association. He succeeds John M. McNerney, who is now manager of the Western regional office.

Walter E. Kunze, Jr., succeeds Burres as manager of personnel training. Kunze was previously assistant manager of PCA's structural and railways bureau.

Ohio Highways change

Hugh Ray, Jr., is acting public information officer for the Ohio Department of Highways, following the resignation of James W. Goodrich.

Wisconsin road commission names new district chief

The State Highway Commission, Madison, Wis., has named V. L. Fiedler district engineer in the Madison District 1 office. He will replace J. C. Jones, who retires in June. G. N. Growt, La Crosse district maintenance engineer, is serving as acting La Crosse district engineer until Fiedler's former post is permanently filled.

Mellon-Stuart elects

The Mellon-Stuart Co., contracting-engineering firm of Pittsburgh, Pa., has elected Robert N. Peters vice president and member of the board of directors. Peters has been with the firm for eight years.

Moles presents awards

At The Moles' annual awards dinner, held late last month, James F. Armstrong and John Bruce Bonny were presented with the society's 1959 awards for outstanding achievement in construction. Armstrong is the member winner and Bonny, the non-member winner, of the awards from the association of leading figures in the tunneling, dam-building, and heavy-construction industry.

Armstrong is vice president of the Peter F. Connolly Co., New York City, and Bonny is vice president and general manager of Morrison-Knudsen Co., Inc., Boise, Idaho.

Asphalt Institute elects

D. L. Nielsen has been elected chairman of the board of The Asphalt Institute, succeeding D. Hugh Jenks, Jr., and J. J. Tumpeer was re-elected treasurer. Other elected members of the executive committee are as follows: Atlantic-Gulf Division, R. B. Lewis and W. N. Ruppel; Ohio Valley-Great Lakes Division, J. S. Van Pelt and L. W. Walker; Midwest Division, E. M. Stone and E. E. Scholer; Southwest Division, Jeff P. Royder and M. O. Hardy; and Pacific Coast Division, F. L. Dunlap and C. W. Turner.

Michigan highway chief named to AASHTO post

Michigan State Highway Commissioner John C. Mackie has been elected regional vice president of the American Association of State Highway Officials. Mackie will serve from region 3, which includes all of the Mississippi valley and midwestern states. He will also serve on the executive committee of the AASHTO, representing the midwestern states.

Pennsylvania department makes new appointments

The Pennsylvania Department of Highways has transferred Victor B. Leopold, former district construction engineer in District 1, Franklin, to the same position in District 2, Clearfield. Edwin M. Grove, former construction engineer at Clearfield, has been transferred to Franklin, with the same title. Arthur Victor Cesare has been named acting district engineer in charge of District 5, with headquarters at Allentown. He succeeds Theodore K. Rothermund.

Rust Engineering names

Thomas H. Scanlon, former staff and project engineer in the engineering department of The Rust Engineering Co., Pittsburgh, Pa., has been named project manager of the firm. Scanlon will be located in Pittsburgh.

Engineering firm names

De Leuw, Cather & Brill, engineers and architects of New York City, have named Benjamin Gray as a general partner of the firm.

HOGBACK PROJECT involves an earth and rock-fill dam to supply water for the greater Hartford, Conn. area. It is 135 feet high and 800 feet wide, and will create a 6½-billion gallon reservoir on the west branch of Connecticut's Farmington River. The dam is designed to discharge 92,000 cfs. It also has a 3 mile tunnel to the Barkhamstead reservoir, and a diversion tunnel designed to carry flood waters up to 31,500 cfs. White Oak Excavators are moving about 600,000 yards of gravel, earth and sand; 500,000 yards of rock; 95,000 yards of impervious soil core; and 30,000 yards of concrete. This requires a full range of construction equipment, all fully protected by the six lubricants comprising the Texaco Simplified Lubrication Plan.

lubrig handle all field lubrication

lubrication Plan "essential to best use of lube rig"

handling, less storage space, less chance for misapplication. And, of course, the Texaco Simplified Lubrication Plan developed for the Hogback project comprises lubricants specifically chosen to meet the requirements of that particular job.

Here are the six lubricants, shown at the left with their Toffolons: (1) For engines: *Texaco Ursa Oil Heavy Duty*; (2) for chassis, wheel bearing and general grease lubrication: *Texaco Marjak Multi-Purpose 2*; (3) for hydraulic units: *Texaco Regal Oil R & O*; (4) for transmissions and differentials: *Texaco Meropa Lubricant*; (5) for wire rope and open gears: *Texaco Crater*; (6) for

track rolls: *Texaco Track Roll Lubricant*.

You'll save time and money by letting a Texaco Lubrication Engineer work out a Simplified Lubrication Plan tailored to the specific requirements of your project. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

For more facts, use Request Card at page 18 and circle No. 204

Construction Equipment



Rubber-tire scrapers load excavation into trucks, in widening a 20-foot pavement to an 80-foot-wide city street section for Multnomah County in suburban Portland, Ore. The operation proved economical for Al Kalkhoven Co., Portland. Here, a Model D Tournapull rubber-tire scraper uses a portable ramp and bridge of timber and railroad rails to get into position



for a dump to a GMC truck. An Austin-Western 99-H motor grader, blades material away from the curb area into the street so that it can be loaded by the Tournapull. The street grade had to be lowered to make room for base and surfacing.

Decisions! Decisions!

Not with THE BIG E

the tractor that thinks for you Automatically selects the right power ratio for any load or strain!

Just one of the many job-time and man-hour saving features of the modern Eimco 105 is the exclusive torque converter-Unidrive team, the only drive and transmission that is engineered with oil cooled, positive engagement clutches that never . . . really never . . . need adjustment. No master-clutch to wear out! No clutch pedal to push! No gears to shift!

You get a smooth, powerful drawbar pull or push that adjusts automatically, through an unlimited number of ratios, to the load and strain . . . even if the tractor is at a standstill! The Eimco 105 engine will never stall through the torque converter.

And you get all the other exclusive Eimco 105 features too . . . upfront full visibility operator location; dual final drives that set a new standard in maneuverability; simple controls that increases work efficiency and output.

Let an Eimco sales-engineer demonstrate the many advantages of the modern Eimco 105. Contact the sales office nearest you or The Eimco Corporation, P. O. Box 300, Salt Lake City 10, Utah.



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For more facts, use Request Card at page 18 and circle No. 205

Beavers present

The Beavers, an organization composed of firms and individuals in the construction industry and allied fields, held its fourth annual award dinner last month in Los Angeles. Golden Beaver honorary awards were presented to eight for their outstanding achievements.

The eight are: L. E. Dixon, president of L. E. Dixon Co., San Gabriel



H. E. Carleton



J. MacLeod

Calif.; John MacLeod, head of Mac Corp., Paramount, Calif.; James Lovell, an executive of Dupont Co., Adm. Ben Moreell, board chairman and chief executive officer of Jones Laughlin Steel Corp., Pittsburgh; H. E. Carleton, vice president of Cal Construction Co., Omaha, Neb.; Oscar S. McCormick, vice president of Al Johnson Construction Co., Minneapolis; Charles P. Dunn, president and director of Morrison Knudsen Co., Inc., Boise, Idaho; and Gen. L. J. Sverdrup.

Dixon, known for many projects structures throughout the Southwest, has worked on major dam and tunnel projects.

MacLeod is one of the founders of the Beavers. In the early 1920's, he organized Maccos, a firm specializing in the erection of oil derricks. In 1927, MacLeod plunged into the heavy-construction field in a successful joint venture for construction of a dam. Today, the firm's activities range from construction to trucking and dredging.

Lovell, another founder of the Beavers, joined Dupont as a professional fire arms shooter, but was assigned to underground ventilation in 1927. He covered mine and tunnel jobs as an expert on ventilation in 1935, when he was transferred to the firm's explosives department as Western representative in the contracting section, a position he still holds.

CONTRACTORS AND ENGINEERS



Foundation and trench digging work on the Bon Tempe Water Treatment plant for the Marin Municipal Water District in California is handled by a Lorain 30-ton MD-430 Moto-Crane that is equipped as a hoe. The machine will later be used to pour concrete on this job.

Equipped with compactor wheels instead of rubber tires, a Michigan Model 180 tractor-dozing spreads and compacts dirt fill simultaneously on the State Route 29 improvement project between Nesquehoning and Hazelton, Pa. As it works, the rig pushes aside big rocks in the fill area.

4th annual dinner

Admiral Moreell is award winner under the special category. Entering the Navy in 1917, he rose to major offices as rear admiral, Chief of the Bureau of Yards and Docks, and Chief of the Engineers of the U. S. Navy. In 1941, he organized the Sea Bees.

Carleton gained much of his early experience in tunnel construction. In 1927, he joined West Construction Co. as general superintendent, and was later promoted to president. During this association, Carleton supervised construction of tunnels in Alaska, Canada, and the United States. When the firm was bought by Morrison-Knudsen, Carleton supervised construction of the Union Pacific Railway's Aspen tunnel. He then joined Coker.

McCormick has, since 1930, supervised many heavy-construction projects for the Al Johnson Construction Co., and is currently managing construction of powerhouse, dam, and highway-bridge projects.

Dunn's wide experience includes hydroelectric design on several projects. In 1934 he joined M-K. As the firm's chief engineer, Dunn designed the U. S. Navy's underground fuel



C. P. Dunn



O. S. McCormick

tanks located at Pearl Harbor. He organized and initiated many of the firm's foreign subsidiaries. Dunn is also president and general manager of International Engineering Co., Inc., San Francisco.

Gen. L. J. Sverdrup began his career with the Minnesota Department of Highways, and later became chief bridge engineer of the Missouri State Highway Department. In 1928, he joined his former professor at the University of Minnesota, John I. Parcel, in a consulting engineering partnership. Several companies of which Sverdrup is now president are outgrowths of that partnership.

Rocky Road Ahead?

You can do more for less on Tru-Seal Tubeless Rims



New Tru-Seal Rims—available in sizes 12.00 and up, including all earth-mover and grader sizes. This rim is similar to multiple-piece rims now in use—PLUS airtight Tru-Seal rubber ring which compresses into sealing groove when tire is mounted.

You couldn't pick a tougher test than working into and hauling jagged, newly blasted rock. On jobs like this, you'll get lower cost-per-ton when your tires are mounted on Tru-Seal Tubeless Rims by Goodyear.

Tru-Seal is the only practical way to seal a multiple-piece rim. In fact, it has been adopted by the Tire and Rim Industry for tubeless replacement of all conventional tire sizes 12.00 and larger.

Like all Goodyear Rims, Tru-Seal offers these additional advantages:

Unusual Strength: Thanks to an exclusive double-welding process, and added support at points of greatest stress, present-day Goodyear Rims are far stronger than previous rims.

Ease of Tire Mounting: No tube and flap troubles.

Special Tools: Goodyear provides both hydraulic and hand tools especially made for off-the-road equipment.

Bond-a-Coat Finish: Only Goodyear Rims have this protective coating which affords long-lasting resistance to rust and corrosion.

If you have a rim problem, talk it over with the G. R. E. (Goodyear Rim Engineer). He'll save you time and money by helping you select the type and size of rim best suited to your needs. Write him at Goodyear, Metal Products Division, Akron 16, Ohio, or contact your local Goodyear Rim Distributor.

Buy and Specify **GOOD YEAR** More tons are carried on Goodyear Rims than on any other kind
METAL PRODUCTS DIVISION

Tru-Seal—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

Watch "Goodyear Theater" on TV—every other Monday, 9:30 P.M., E.S.T.

For more facts, use Request Card at page 18 and circle No. 206



More than 31,000 tons of asphaltic concrete for 4.61 miles of Interstate Highway I-10 near Las Cruces, N. Mex., is turned out by this Pioneer Model 81. The belt at right feeds the 72-inch X 24-foot dryer; a hot elevator carries them to the three compartments of the gradation unit.

The cloud of dust blowing from the stack of the asphalt plant used on the paving of the new Interstate Highway I-10 just north of the Texas line near Las Cruces, N. Mex., was really accomplishing a purpose. The Pioneer plant, equipped with an efficient dust collector, was blowing out excess fines from the aggregate to keep the final mix within the desired range of gradation.

This plant turned out more than 31,000 tons of asphaltic concrete at this setting for the paving of 4.61 miles of the new divided highway. The general contractor for the grading, structures, base, and paving was Henry Thygesen & Co., Albuquerque. The project was planned and supervised by the New Mexico State Highway Department.

On an entirely new alignment, this section of road joins a previously constructed highway section of U. S. 80 in New Mexico with a new section of interstate highway being built in Texas. Because of the connection with the new alignment in Texas, the road built under this contract cannot go into use until the entire section leading into El Paso is completed.

After grading was done, roadway surfacing began with the placing of an 8-inch-deep ballast course of minus 2-inch material. This ballast was crushed in a pit near the job site, trucked to the roadway, bladed to grade, watered, and rolled.

The next course was a 4-inch lift of minus 1-inch material produced in the same pit and placed by the same general method used for the ballast. Compaction was accomplished with



Aggregates go from the gradation unit to the continuous pugmill to be mixed with asphalt before being discharged into the Chevrolet truck.

Plant feeds two finish

13-wheel pneumatic rollers and 50-ton rubber-tire rollers. The base was primed with MC-1 and then tacked with AE-3 emulsified asphalt ahead of the first lift of asphaltic concrete.

Aggregates produced on site

In a pit near the job, Thygesen set up a Universal master tandem portable crushing rig to produce ballast, base, and hot-mix aggregates. The crushers were powered by a pair of Cat D13000 engines. Two D8 tractor-dozers pushed the raw material to a trap feeding a belt conveyor that carried the gravel to the plant. Trucks

took the crushed material from the plant to the road or to stockpiles.

Aggregates for each of the three courses were produced in a single gradation. The ballast rock ranged from 2 inches down; base-course material was from 1 inch down; and hot-mix aggregate was minus 3/4 inch. Thygesen wasted excess fines from the dryer with a conveyor.

Adjacent to the pit, the contractor set up his Pioneer Model 81 asphalt plant. The plant was arranged so that a Cat D8 tractor-dozers pushed materials from the stockpile to a trap where a reciprocating feeder delivered

NOW

R-1160

ROADRANGER TRANSMISSION

designed specifically for earthmoving and construction equipment



The Fuller 9-speed semi-automatic R-1160 ROADRANGER Transmission is engineered for tractors and trucks equipped with engines of up to 1160 cubic inches piston displacement. An outgrowth of Fuller's highly-successful Model R-1150 ROADRANGER, the R-1160 is designed to handle up to 800 lbs./ft. of engine torque.

Featuring higher capacity and long wear life, the newest ROADRANGER is built to give fast work cycles, low fuel

consumption, longer engine life, less down time, reduced operator fatigue ... and greater profits.

Standard on the R-1160 ROADRANGER is Fuller's Air Powered Countershaft Inertia Brake, which provides quick up-shifts without double-clutching simply by pressing a button. Also standard is the Fuller Pressurized Filtration System, whereby gear oil is circulated by a pump through a filter which removes me-

tallic particles and road grit from lubricant.

To increase the capacity of R-1150, Fuller widened the faces, coarsened the pitch of auxiliary and reduction gears. Accompanying this change is an increase in synchronizer capacity, and a new auxiliary case of greater section and length accommodates the larger gears. Front section yokes except the third and fourth are clamped to the

interstate highway

the aggregates to a belt conveyor that discharged into the dryer. The 72-inch x 24-foot oil-fired dryer easily handled enough of the nearly dry material to keep pace with the rest of the operation. The dust from the dryer was blown out the stack, instead of being recovered in the dust collector, to remove the excess of fines.

The hot elevator carried the materials from the dryer to the gradation unit, where they were separated and stored in three sizes. These three sizes were combined again in calibrated proportions on their way to the continuous pugmill mixer.

Asphalt of the 85 to 100-penetration grade was delivered to the 19,000-gallon-capacity plant from the refinery at Big Spring, Texas, in truck transports. Here the asphalt was heated by a Childers Model C-100 hot-oil heater.

Power for the all-electric plant was provided by a pair of Cat D13000 diesel generator sets. A Cat D315 set provided power for operation of the heater and lights at night.

Six or more dump trucks hauled 10-ton loads of the mix from the plant to the two Barber-Greene finishers on the road. As each load left



One of the Barber-Greene finishers on the job receives a load of the hot-mix.

the plant, it was weighed on a Murphy 60-ton truck scale.

Lay two courses

The laydown machines first laid a 1½-inch course 38 feet wide on each of the roadways. The second 1½-inch lift of bituminous concrete was then placed over the first to a width of 24 feet. This left the first course exposed



A Galion 10-ton tandem roller compacts the mat behind the paving crew.

10 feet on the outside and 4 feet on the inside to provide the shoulders.

Behind the pavers were two Galion 10-ton tandem rollers and a Bros 11-wheel self-propelled rubber-tire roller to provide the compaction.

The superintendent for Henry Thygesen & Co. was Paul Cross. The assistant superintendent was Earl Shannon. For the New Mexico State Highway Department, Raymond Polk was project engineer. The work was under the supervision of the Deming District, with A. M. Morrison as district engineer. L. D. Wilson is chief highway engineer for the state.

THE END



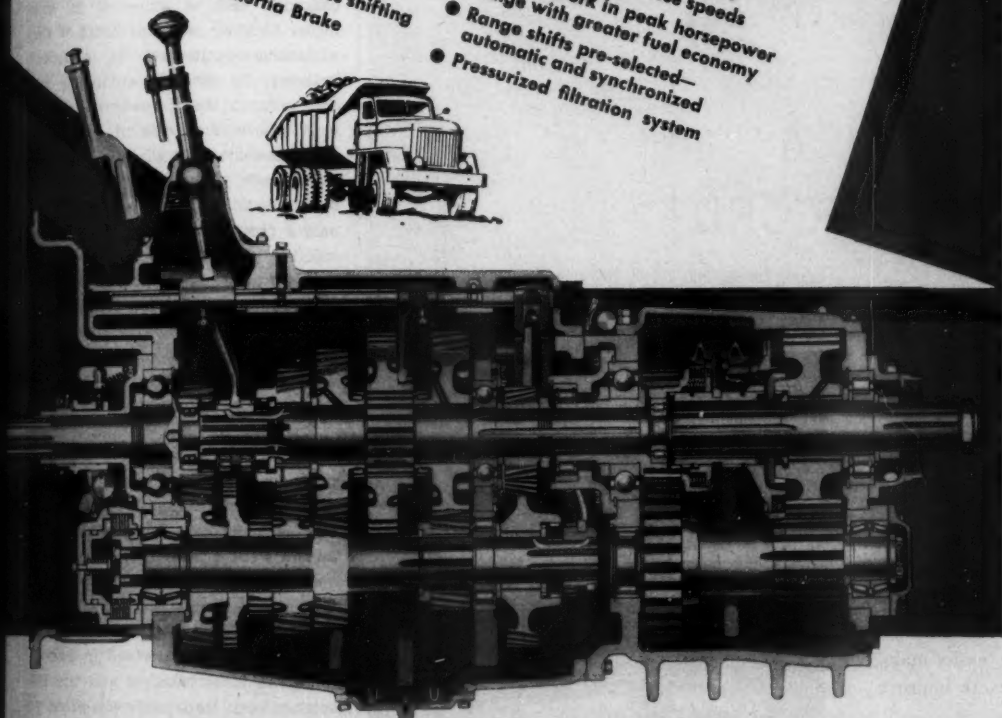
A Bros self-propelled 11-wheel rubber-tire roller provides additional compaction for the courses.

THE R-1160

PROVIDES THESE ADVANTAGES

- No gear splitting—9 selective gear ratios are evenly and progressively spaced
- Easier, quicker shifts—38% steps between ratios
- Less driver fatigue—½ less shifting
- Countershaft Inertia Brake

- One shift lever controls all 9 forward and 2 reverse speeds
- Engines work in peak horsepower range with greater fuel economy
- Range shifts pre-selected—automatic and synchronized
- Pressurized filtration system



VITAL STATISTICS

GEAR	RATIOS	% STEP	
Ninth	.75	33	HIGH RANGE
Eighth	1.00	39	
Seventh	1.39	40	
Sixth	1.94	34	
Fifth	2.59	34	
RANGE SHIFT		34	
Fourth	3.48	39	LOW RANGE
Third	4.84	40	
Second	6.76	34	
First	9.02		
Reverse	3.31	High Range	
Reverse	11.53	Low Range	

WEIGHT: 1133 lbs. LENGTH: 44½" OIL CAPACITY: 35 pts.; with filter, 38 pts. CLUTCH HOUSING SIZE: SAE No. 1 APPROXIMATE ENGINE SIZE, CU. IN.: 1160

FULLER

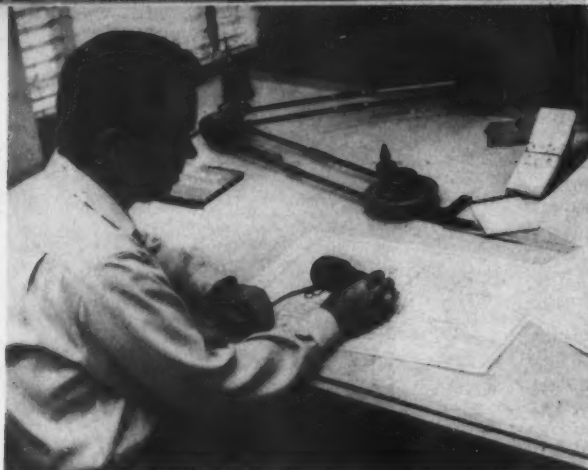
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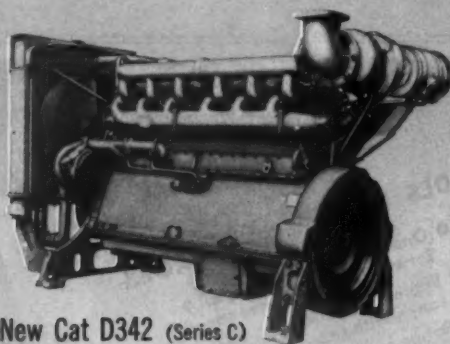
For more facts, use Request Card at page 18 and circle No. 207



Highway district offices

Branch offices of the California Division of Highways now use finished positive photographic intermediates—which can be changed by simple erasure and redrawn upon as easily as an original—to record changes in a job while work is still under way.

**engine
power**
BY CATERPILLAR



The New Cat D342 (Series C)

BRAND-NEW ENGINE WITH A 27-YEAR PERFORMANCE RECORD!

Can an engine with 27 years of hard and profitable contract work behind it be called new? Not with any degree of accuracy. This is especially true of the D342 (Series C). Yet, it is an engine made up of hundreds of newly engineered parts, compounded to provide an increased work range.

But there's far more to offering this new engine to meet the realistic needs of contractors than just knitting metals into horsepower at the drive shaft.

In 1931 Caterpillar introduced the first diesel engine in a track-type tractor. You've probably heard this before, but did you know that the four-cycle design employed in that engine is still found in every Cat Diesel? It was the best then; it's the best now.

Our original fuel system principle was so simple, easily maintained and economical that it has only been necessary to improve the parts.

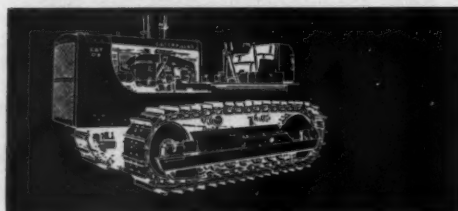
Diesel engines have always required sizeable capital investments. This has led to highly competitive pricing. Cat Engine quality standards are never lowered to gain an initial price advantage. Cat owners realize increased performance and profit that far exceed any difference in initial price that might exist between Cat Engines and competitive diesels.

The former Cat D342 Engine has been redesigned, reshaped and improved in *all* of its many parts. These improvements help the contractor produce more with excavators, crushers, batch plants and other machines on the job. And this design progress will continue.

If this sounds like the kind of diesel engine that could fill a need on your job, then specify the D342 (Series C) for your next appropriate construction machine, or see your Caterpillar Dealer. Also write us for the more detailed D342 (Series C) brochure, Form No. 20151-1.

Engine Division, Caterpillar Tractor Co., Peoria, Illinois, U.S.A.
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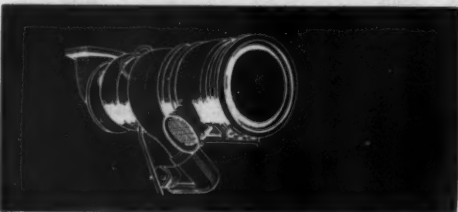
Taking the gamble out of buying a new engine.



PERFORMANCE. D8 Tractors have long been made the standard for tractors by contractors. The predecessor configurations of the D342 have contributed mightily to this acceptance.



SERVICE. The new D342 (Series C) is backed with 24-hour availability of parts and service. The outstanding unified Cat Dealer organization gives a big plus-benefit to buyers of every Cat Engine.



IMPROVEMENTS. Important advances include: (1) increased HP in all D342 (Series C) configurations; (2) turbocharging produces greater power capacity and fuel economy; (3) a new efficient air cleaner now has 99 plus per cent dust removal.

OTHER QUALITY FEATURES include valve rotators to provide prolonged and uniform valve seating, cast-iron top ring band for longer piston and ring life, and crankshafts induction hardened and shot peened for greatest toughness and strength.

The celebrated man who moved a mountain by carrying away small stones has nothing on the California Division of Highways. It is using a more direct approach in moving mountains of paper work: engineering drawings that have to be kept accurate as changes are made in original plans.

The variations, caused by new information on the placement of such utilities as gas mains and electric conduits, can be expected in any major building program. Most of the variations authorized in contract drawings by resident engineers result because today roads are being built where none existed previously—and in some cases where it was once considered virtually impossible to build roads. Utilities may be found only a foot or two away from where information indicated they would be, but variations have to be shown; should rebuilding or new construction be required decades in the future, accurate information could mean the difference between life and death to men with jackhammers.

The difficulty in handling these variations stemmed from the fact that "as built" information didn't get back to Sacramento until after a job was finished. Interim working papers were needed in the division's eleven district offices and separate bridge department, which supervise all construction. At the end of a job, the needed papers arrived in Sacramento in large batches, and the resulting work loads were too great to be absorbed conveniently.

Day-to-day changes

Today, all this has changed. Original tracings, used to make the contract blueprints, still remain in Sacramento where contract negotiations and ultimate settlements are handled. But branch offices, instead of using blueprints and noting changes or variations on them in pencil, now use permanent quality drawings that will produce an acceptable engineering intermediate. And branch offices are charged with the responsibility of keeping up the finished "as built" plans.

The program was started on an experimental basis, with direct-to-positive prints produced individually on a contact frame in the highway division's reproduction section. The

—For more facts, circle No. 208

es work load with photography

**Direct-to-positive
photographic intermediates
simplify recording of
"as built" information**

A GRANITE SLAB 6 X 6 feet square is brought into position by a Hi-Duty fork-lift just above the point



where it will be set, during work on the new building that will house Minnesota's highway-department offices in St. Paul. The 1,700-pound slab will be lowered into place by a hand winch.

finished prints are exact reproductions of the original tracings, with dense lines and a high degree of permanence. The highway division's engineering draftsmen can enter changes on these photographic intermediates much the same as on pen-and-ink drawings.

Once the program proved out, the division installed facilities for mass-reproducing an estimated 700 drawings per week. These now go to the district offices right after the contracts are let, along with all other materials needed to supervise the actual construction job. The positive intermediates are kept as a working record in the district offices. Field engineers report in frequently during the course of a project, advising on progress and any authorized variations. With the photographic intermediates, the draftsman in the branch office is able to make the necessary changes as soon as he hears about them. This makes it possible to keep up with "as built" construction on a day-to-day basis. When a job is finished, the intermediates become the finished "as built" plans.

Equipped for job

When the program took on full-scale proportions, with volumes running to 700 drawings weekly, it became obvious that more production capacity was needed than the vacuum frame could provide. The highway division, then considering the addition of a second blueprint machine to its reproduction section, had the new machine equipped for both blueprinting and for producing positive photographic prints on a continuous basis at a rate of 4½ feet per minute.

Under the work-routine setup, translucent direct-to-positive paper, purchased in 300-foot rolls, is run through this machine one day a week. This uses the continuous production capacity of the machine to best advantage, for the average weekly production of about 600 full-sized drawings is handled in a single working day.

About 100 positive intermediates are made per week on the division's vacuum frame, which is used when there is a rush job, or when positive copies are needed on film base or must be kept to tolerances that can be maintained only with vacuum-frame contact.

THE END.

For more facts, circle No. 209→

LORAIN 2½-YD. 85-A HELPS BOSO AND RITCHIE MOVE 525,000 YARDS AHEAD OF SCHEDULE



28 Lorains have paid off for Boso and Ritchie, Inc.

"There's no substitute for ruggedness and the Lorain 85-A has it. The shale we handled has a density of 2,800 pounds per yard, the sandstone 3,000 pounds a yard. And our 2½-yard Lorain averaged 2,000 yards a day, helped us complete 75% of the job in half the allotted time."

So reports H. D. Beeson, project superintendent for Boso and Ritchie, Ravenswood, W. Va., on Highway 60 relocation job between Burning Springs and Witcher Creek, W. Va.

Unmatched dipper action with "Joy Stick" control. Finger tip "metered" air power control with only two levers eliminated most of the slam bang operation. Smooth, controlled application of power has doubled cable life.

Shear-Ball mounting helps cut maintenance. Lorain's exclu-

sive turntable mounting gives smooth, rock-steady swing—no need for the constant adjustment common to other mountings. Infrequent greasing is all the maintenance that's needed.

Controllability pays off on crane and hoe operations. With "Joy Stick" metered air control the operator combines operations to any degree wanted. "This simultaneous hoist, swing and travel is especially important on bridge jobs when we're using our 85-A as a crane to place steel in tight positions."

Rugged, with low maintenance, superior controls, and readily convertible to shovel, dragline, clamshell, hoe or crane, the versatile 85-A can boost your output whatever your job. Contact your Lorain distributor for the whole story.

LORAIN®

THE THEW SHOVEL COMPANY, LORAIN, OHIO

Last month's Washington, D. C., meeting of the Highway Research Board again drew a capacity audience to one of the best attended conventions in the highway field. Over 1,800 delegates participated in this 38th annual meeting of the HRB held at the Sheraton-Park Hotel, January 5 through 9.

To present and discuss the 177 research papers and technical reports prepared for the meeting, the HRB conducted 41 sessions spread out over morning, afternoon, and evening hours. The papers covered the following eight topics in the highway field: (1) economics, finance, and administration; (2) design; (3) materials and construction; (4) maintenance; (5) traffic and operations; (6) soils, geology, and foundations; (7) night visibility; and (8) urban research.

The last topic, urban research, was emphasized at the opening-day general session by Wilfred Owen of the Brookings Institution. The transportation economist called attention to traffic stagnation in cities, and deplored the lack of urban planning that would tie into the national Road Program. Owen warned that no permanent solution to traffic congestion could be expected from the transportation efforts now being made, and he urged the formation on a national scale of an Urban Research Board. This could be a sister organization to the Highway Research Board, he suggested, or it might be an expansion of the HRB. Owen conceded that there would be some overlapping of interests, but felt that each would serve the other for a mutual gain. This country cannot look at each element of transportation alone, he stated, without considering its relationship to the other elements involved. Owen concluded with a plea for a fresh outlook in highway research to solve the traffic problems of the nation.

In another opening-session address, Detlev W. Bronk, president, National Academy of Sciences—National Research Council, told the meeting that the National Academy is about to undertake a broad study of all kinds of transportation from its technical and scientific aspects. He cited particularly the need for adequate research in railroad transportation. Bronk related how he recently inquired of the president of a large eastern railroad his feelings about a possible research project. The rail head, however, would talk only of "lifting the tax burden," according to Bronk, and when pressed for an answer as to what the public might do for mass transportation, his reply was that it could use buses or air lines, for passenger trains were on the way out in this country.

Davis elected HRB chairman

The Highway Research Board elected Harmer E. Davis chairman for 1959. He is director of the Institute of Transportation and Traffic Engineering at the University of California, and was first vice chairman of the Board during 1958. Davis succeeds C. H. Scholer, Head of the Applied Mechanics Department of

Kansas State College. The new chairman was also selected by the HRB to receive its Roy W. Crum distinguished service award for 1959. According to the citation accompanying the award, Davis was chosen "in recognition of his outstanding record of leadership and achievement in highway engineering, in highway engineering research, and as an educator."

Alan M. Voorhees, traffic-planning engineer of the Automotive Safety Foundation, Washington, D. C., received the 1958 Highway Research Board Award which is made annually to "recognize the authors of papers of outstanding merit." Presented at the

1958 meeting, Voorhees' award-winning paper, "Forecasting Peak Hours of Travel," suggested mathematical techniques for predicting future traffic volumes and characteristics, to replace costly and time-consuming questionnaire methods. The new techniques have been successfully tested during the past year in Baltimore, New Haven, and other cities.

AASHO Road Test

The opening session of the HRB also included a progress report on the American Association of State Highway Officials' Road Test near Ottawa, Ill. The test traffic and search phases of the project got under way last October 15. The report was prepared by project director W. R. McKendrick, Jr., and in his absence

Highway Research Board



ELECTRIC DRIVE BY
R. G. LeTOURNEAU, Inc.
LICKS STEEP GRADES
AND MUD...

This Electric Arch is one of many used to fell timber forests all over the world. Designed specifically for logging, it makes full use of the Electric Wheels to climb 40 per cent steep grades and over the roughest trails. Coming down with 30 tons of logs, the Arch job makes profitable use of regenerative braking that never wears out. Infinite speed control on request.



SNO-FREIGHTER puts tremendous power and traction of Electric Wheels to work traversing frozen North. Individually powered wheels and wide-base low-pressure tires keep it going over deep snow, icy footing.



AIRCRAFT TOW TRACTOR's Electric Wheels develop tremendous torque, have infinite range of power control from dead stop to full speed. Starts are so gentle and smooth they are imperceptible to the eye.



STACKER lifts... carries... Simple fingertip switches control movements thru system of electrically spotted on machine at point of power take-offs or transmissions.

Bolds 38th annual meeting

was presented by William N. Carey, Jr., chief engineer for research.

Traffic is now operating on the test loops, and a considerable amount of valuable data has already been collected. The primary purpose of the project is to collect data on the behavior of the test pavements, both rigid and flexible types. The project includes some 14 miles of 2-lane high-

way and will cost over \$21 million, of which more than \$17 million will represent the cost of the research. At the peak of operations, nearly 700 people were employed on the project. As expected, some of the thinner pavement sections and several of the overstressed bridges have shown distress. Four bridge spans have already failed and are now out of the test. A

color film of 1958 activities at the AASHTO Road Test was presented as part of the report.

Another new color movie shown at the meeting was entitled "Lost Mixing Time of Dual-Drum Pavers." This 16-mm film was presented at one of the Materials and Construction sessions, and it highlights the importance of the simultaneous mixing interval in meeting mixing time specifications with dual-drum pavers. It shows some trouble spots and the significance of proper adjustments to the batch meter. The movie has a running time of 30 minutes and was prepared by the U. S. Bureau of Pub-

lic Roads. Its showing was sponsored by HRB's special committee on highway equipment, of which Morgan J. Kilpatrick is chairman.

Lime stabilization

At one of the Soils sessions, considerable attention was given to the subject of lime stabilization. Of four papers dealing with this topic, that presented by Chester McDowell, supervising soils engineer of the Texas Highway Department, covered a report of the HRB's Lime and Lime-Fly Ash Soil Stabilization Committee of which McDowell is chairman. He informed the session that the treatment of clays with lime in Texas started about seven years ago, and has increased in demand so rapidly that several hundred miles of this type of stabilized subbase now can be found on this state's highway system. The use of lime for stabilization purposes in Texas alone has reached an average of 9 to 10 thousand tons monthly and is increasing. Percentages of lime used have varied from 1 to 8, based on dry weight of soil; and costs in the southern states, exclusive of surfacing, have varied from 22 to 50 cents per square yard for a 6-inch depth. Most of the lime used for stabilization has been hydrated lime, although some quicklime and waste lime have been employed with success.

According to the report, the stabilizing characteristics of lime make it: (1) easy to mix with soil; (2) reduce quickly the plastic properties of soil when wetted; (3) set slowly so that the time interval between mixing and compacting is not critical, especially if the mixture is not allowed to remain spread in a thin windrow for long periods of time; (4) adaptable to compaction over a two or three-day period; bases need not be rolled all at once, thus allowing time for base to adjust to subgrade; (5) economical to use.

As to clay-lime subbase treatments, McDowell's report listed the following benefits: (1) lime-treated subbases form a working table upon which contractors can continue construction of pavements shortly after rains; (2) wetting operations for such treatments transfer enough water into subgrade soils to cause their subgrade to lose some of its swelling characteristics; (3) the treated layers form a water barrier to prevent excessive shrinkage cracking of subsoils due to drying or infiltration of water during rainy weather; (4) lime-treated layers form a subsection of the total depth of pavement. **THE END**

5 years of rugged performance prove

Advantages of All-wheel Electric Drive



Since 1953, R. G. LeTourneau, Inc., has been building big, mobile machines with every wheel driven by a unique application of diesel-electric power — the Electric Wheel. These machines are now at work on every continent of the world, proving daily that electric power and control can do more work in less time at lower cost than machines with conventional drive.

An Electric Wheel is essentially a self-contained prime mover — a DC electric motor and gear box mounted in its rim. Each machine's Electric Wheels work as a team, all powered by a diesel-electric generating system. The tremendous torque of this electric drive plus the high flotation of man-sized, low-pressure tires keep these machines rolling over rough ground, steep grades, mud, sand or snow.

Over the years our Electric Wheel System has been developed and perfected until it is now a completely integrated system of efficient, trouble-free components—all of which we make ourselves, even our electric motors. This careful development of components has permitted us to design and build machines to fit specific jobs, so that these jobs no longer need be limited to inefficient existing machines.

NOW IN EARTHMOVING

Earthmoving machines with all-wheel electric drive — one of them shown below — have recently been designed and built for the big jobs in construction and mining. For information please write 2395 South MacArthur, Longview, Texas.



R.G. LETOURNEAU INC
LONGVIEW, TEXAS

to full speed... and automatic sharing
to wheels with best footing are other
Arch features which make profitable log-
ging in areas that would be inaccessible
conventional equipment. Case histories of
Arch job performance prove the contri-
bution this machine has made to logging, and are
on request.



carries more than 30 tons
own rough trails. Regenerative
braking never wears out...
absolute downgrade control
at any selected speed.

GENERATORS are built in one of our
own plants, as are all the trouble-free,
standardized components in the Electric
Drive System. Here one undergoes
quality control check before installation.

NEW EARTHMOVING EQUIPMENT—L-130-
Ton Digging Scraper does bigger job
(self loads 130 tons of dirt) at one pass
than any other scraper ever built. Write
for information on other BIG machines:

Insley equipment show features new products

A week-long open house, recently held by the Insley Mfg. Corp., Indianapolis, Ind., for distributors and contractors, featured a display of the firm's new models of heavy-duty construction machinery. Highlighted at the show were a new 45-ton truck crane, mounted on a 4-axle truck, manufactured by the company's West Coast division, and the M and WT series of Insley cranes and excavators.



BELIEVE ME... M-F HAS THE
Right Approach
on HOW TO MAKE MONEY WITH A BACKHOE



Most backhoes will dig – and, they'll dig themselves into a "hole," too.

But, with this M-F Work Bull 202 rig and matched Davis Loader-Backhoe, you simply can't get cornered! Thousands have proved it!

First of all, the Davis 210 Backhoe has a hydraulic rotary swing cylinder with a continuous 200° working radius – digs or dumps at right angles to either side.

When you run into a situation that calls for digging flush alongside a wall, fence, hedge, or other obstacle – you simply move the mast and boom assembly to either end

of the frame and continue right on digging. No need to call in a pick and shovel crew.

It develops up to 10,000 pounds of break-away – handles the hardest soil, frozen ground, or asphalt paving.

Notice, you sit where you can see, and you always face the bucket.

The M-F Work Bull and Davis Loader completes the profit picture. You get out more work – than with any other rig.

Your Massey-Ferguson Industrial Dealer can help you select the right outfit, and he'll back it up with service. Write today for free literature; his name and address.



MASSEY-FERGUSON
INDUSTRIAL DIVISION

1009 SOUTH WEST STREET • WICHITA 13N, KANSAS

For more facts, use Request Card at page 18 and circle No. 211

CONTRACTORS AND ENGINEERS



M. E. Chandler, new assistant vice president of sales for the Koehring Division, Koehring Co.



M. E. Chandler has been promoted to the newly created post of assistant vice president of sales for the Koehring Division, Koehring Co., Milwaukee. Formerly assistant sales manager, Chandler will have over-all supervision of the sales office, parts and service departments, sales promotion, and new-product activities.

At the same time, **William B. Dickerson** has been named sales manager, responsible for all field sales personnel. He will also direct external field sales activities in the United States dealing with Koehring cranes, excavators, pavers, concrete finishing equipment, the Dumptor, and the Mud-Jack.



R. E. Lenhard, president of Air Reduction Sales Co., division of Air Reduction Co., Inc.

R. E. Lenhard, executive vice president of Air Reduction Sales Co., the industrial gases and welding products division of Air Reduction Co., Inc., New York, N. Y., has been appointed president of that division. He succeeds **J. H. Humberstone** who, as vice president of Air Reduction Co., will devote full time to corporation affairs.

James M. Thomas has been named Oregon state sales manager for the North Pacific Division of **Armco Drainage & Metal Products, Inc.**, a subsidiary of **Armco Steel Corp.**, in Portland, Ore.

Floyd R. Anderson, administrative assistant of the Denver division of **Gardner-Denver Co.**, Quincy, Ill., has been named chief metallurgist of the firm. He will supervise metallurgical operations of all divisions of the company, both domestic and foreign.

Motorola Communications & Electronics, Inc., a sales and service subsidiary of **Motorola, Inc.**, has named **Don C. Livingston** to the newly created post of manager of 2-way radio sales in a 10-state southern area. From headquarters in Dallas, Texas, he will manage the sale of 2-way radio communications equipment in an area bounded by New Mexico, Oklahoma, Arkansas, Tennessee, and Georgia. **Livingston**, formerly regional manager in Kansas-Missouri and southern Illinois, is succeeded at this post by **William H. Hawks**.

E. W. Pogue, office and credit manager for **Hyster Sales Co.**, Portland, Ore., industrial truck dealers, has been made general credit manager of the **Hyster Co.** He will work out of the firm's general headquarters in Portland. With **Hyster** since 1944, **Pogue** will handle all credit matters for the company.

Gene A. Fuhrman has been promoted to manager of the Philadelphia division of **The General Tire & Rubber Co.**, Akron, Ohio. He replaces **Richard Graybill**, who has been transferred to manufacturers' sales. **Fuhrman**, who was formerly regional manager of retail stores for the firm, will now direct replacement tire sales in portions of Pennsylvania, Connecticut, Delaware, Maryland, New

Jersey, New York, and in Washington, D. C.

The company has also promoted **Frank E. Rebek** and **John D. MacArthur** to manager of the Detroit and Cincinnati divisions, respectively. Heading replacement tire sales in Michigan and northwestern Ohio, **Rebek** succeeds **Don E. Casterline**, newly appointed manager of the Dallas, Texas, division. **MacArthur**, directing divisional sales of replacement tires, succeeds **F. W. Darbro**, who has been appointed regional manager of new distribution for the company.

Charles L. Howes, formerly Dallas division manager, has been transferred to the manufacturers sales department of the General Tire & Rubber organization.

C. E. Jones, the new manager of engine sales for International Harvester's Construction Equipment Division.



C. E. Jones has been promoted to the post of manager of engine sales for the Construction Equipment Division, **International Harvester Co.**, Chicago, Ill. For the past six years, **Jones** has worked out of the division's Melrose Park, Ill., headquarters. His last assignment was that of divisional supervisor of sales engineering and sales development. **Jones** has been with **International Harvester** since 1936.



JOB RECORDS PROVE

Firestones turn downtime into worktime profits!

Where the going is rough, records prove job-engineered Firestone tires give you extra hours of service! Cost-conscious contractors count on Firestones to keep all off-the-highway projects—from earthmoving to grading and hauling—rolling on schedule. Here's why—they're built with Firestone Rubber-X, the longest wearing rubber ever used in Firestone tires! And Firestone S/F (Shock-Fortified) nylon and rayon bodies withstand bruising shock and impact for maximum tire protection. With treads engineered for every job, Firestone off-the-highway tires deliver the extra stamina, strength and pulling power that turns downtime delays into worktime profits! See

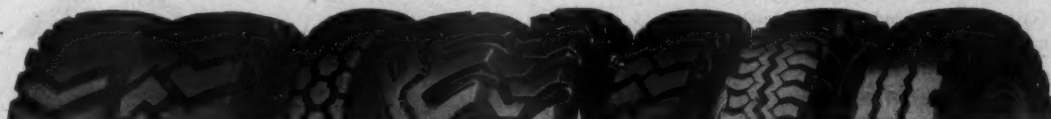
your Firestone Dealer or Store and ask about the full line of Firestone tubeless and tubed off-the-highway tires and on-the-job tire service.

*Firestone T.M.

Firestone

BETTER RUBBER FROM START TO FINISH

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Rock Grip®

Rock Grip Wide Base®

AMS Earthmover

Ground Grip® Wide Base

Super Ground Grip® Road Builder

Super Rock Grip Deep Tread

Super Mileage Log Logger

Rib Excavator®

For more facts, use Request Card at page 18 and circle No. 213

Scrapers work six weeks to place 450,000 yards of surcharge for taxiways

A fleet of 14 scrapers, aided by 7 tractors, did a swift job of placing 450,000 cubic yards of surcharge to consolidate the unstable subsurface conditions for new taxiways at New York International Airport. The entire job took six weeks, and the fleet averaged about 16,000 cubic yards per 10-hour day.

Another 150,000 cubic yards of surcharge was required for the new 8,400-foot instrument runway at the airport to consolidate subsurface conditions. The placing of the surcharge for the instrument runway and the taxiways, handled under separate contracts by M. Parisi & Son, Inc., Maspeth, N. Y., is part of a master plan adopted by The Port of New York Authority to provide a dual runway system for the airport. This dual feature will make possible simultaneous landings and takeoffs during instrument-weather conditions.

The new \$12 million runway, located parallel to and 3,000 feet east of the existing Instrument Runway 4-22, is expected to double the airport's instrument-weather capacity to 80 to 100 movements per hour.

Meadow mat

The placing of an 8 to 10-foot-thick surcharge for both the taxiways and runway was required to consolidate the 4 to 8-foot-thick meadow mat existing under 9 feet of hydraulic fill. This fill was placed when the airport was built to cover the marshy tidelands at the site.

After the surcharge had been placed over the runway location, the taxiway surcharge was completed. At the peak of operations, Parisi used 14 Caterpillar DW21 scrapers, four D8's, one D9, and two D7 tractors to place the surcharge for the seven taxiways between the new and existing runways. Most of the 450,000 cubic yards was obtained from three borrow areas on the airfield.

A pressure distributor sprayed cut-back RC-2 asphalt over surcharge for both runway and taxiways to prevent any wind erosion. This prevents winds from blowing the fill material onto the existing runways. The surcharge is kept in place and periodically checked until the settlement curve shows no appreciable settlement. This generally requires a period of four to six months.

High-speed taxiways

The taxiways to be built are of

high-speed design; that is, they have curved alignments with the new runway. It is the first time that taxiways of this design will be built at an airport in this country. Their advantage is the easier, faster exit of aircraft from the runway, clearing it for other aircraft waiting to land. These high-speed taxiways will be 75 feet wide with 25-foot shoulders.

Taxiways will consist of two 4-inch lifts of penetrated stone base on a

6-inch blanket of screenings. The pavement will be a 2-inch asphalt concrete wearing surface on a 2-inch binder course.

The runway will have a 12-inch unreinforced-concrete slab, 150 feet wide, on a 6-inch compacted base course with 25-foot-wide penetrated macadam shoulders. Before paving operations begin, the surcharge fill will be graded and rolled by a steel vibratory-type roller.



This is next. Louis Isabella explains job details to Standard's Jerry Bushman. Isabella's contract covered concrete paving of 26 miles of 24 ft. single lane highway plus interchange connections. When complete, Highway 41 in Wisconsin will be a divided lane freeway.

How Standard Oil serves a contractor

Case example:

What happened when Isabella Construction got U.S. Highway 41 paving job near Milwaukee

When N. M. Isabella, Inc. set out to put down 26 miles of pavement on U.S. Highway 41, they met Standard Oil's Jerry Bushman, an experienced automotive lubrication specialist. Jerry was ready right then to provide technical assistance on the job.

The contractor next learned about Standard Oil service when two Standard agents went into action. One agent, they found, was based at Slinger, only three miles away. Another agent was located at Allenton, only five miles from the part of 41 to be paved. These agents set up delivery schedules to the job, and meanwhile, Jerry Bushman arranged for fuel storage and pumping equipment.

Isabella put down 363,000 square yards of paving, averaging 1,600 feet of production daily. They got the job done because they were backed by the kind of service they, and their subcontractors, received from Standard.

Standard has 3,900 agents in the 15 Midwest and Rocky Mountain states ready to serve contractors in the same way these two agents served Isabella. Lubrication technical service comes from qualified, trained men located in Standard's 48 district offices. Get this kind of help on your job. Call the Standard office nearby or write to **Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Ill.**

Standard Oil Petroleum Products used by N. M. Isabella, Inc.

STANOLUBE S-1 Motor Oil

STANDARD RED CROWN Gasoline

STANOLEX Diesel Fuel

AMOCO Lithium Multi-Purpose Grease



You expect more from **STANDARD** and you get it!

The fleet of 14 scrapers hauling surcharge fill for the new taxiways at New York International Airport averages 16,000 cubic yards per 10-hour day. This Cat DW21 is dumping its load, and the material is being spread by D8's.



for any soft spots. The runway will be capable of supporting the heaviest aircraft scheduled for air-line operation.

For the first 1,400 feet of the new runway, station 0+00 to 14+00, hydraulic fill was necessary. Station 14+00 to 42+00 was the only section of runway which required surcharge since the section from station 42+00 to 84+00 was covered with material stockpiled at the time the original

hydraulic fill of the airport was placed.

Personnel

Joseph Parisi was the superintendent and Martin Demel, the assistant superintendent for M. Parisi & Son. Frank Carey is the resident engineer for The Port of New York Authority, with Stan Forman in charge of the field work at New York International Airport.

THE END



Standard's Jerry Bushman and Don Isabella wind up some lubrication details. Jerry knows the score when it comes to lubrication of construction equipment. He has a science degree from Marquette plus more than four years' experience in this sort of work. He has also completed the Standard Oil Sales Engineering School course.

P&H celebrates 75th year with new machinery lines

Harnischfeger Corp., Milwaukee, Wis., is celebrating its 75th anniversary this year, and highlights of this anniversary year are plans to bring out four or five new excavator models; a new line of truck cranes; a new line of electric hoists ranging in capacity from 250 pounds to five tons; a new line of V-type loop scavenger models to be added to the company's diesel-engine line; and the other half of a new line of dc rotary welders introduced last year.

This type of equipment little resembles that turned out by the founders of the company—Alonzo Pawling and Henry Harnischfeger. On December 1, 1884, the two started business. Some of the early products were carving machines, brick-making machines, and a poppet-valve governor for Bruno Nordberg, an engineer from Finland who later started the Nordberg Mfg. Co.

After successive moves to accommodate the rapidly growing business, the company in 1903 acquired the first unit of its main plant on W. National Ave., which now covers 26 acres. Shortly after, P&H entered the construction field with a line of powered excavators, pioneering in many features which today are accepted standards in the shovel industry.

In 1911, the ill health of Alonzo Pawling ended the long and active business association of the partners, and he withdrew from the company, selling his interest to Henry Harnischfeger. Soon after, the company name was changed to its present form, Harnischfeger Corp. However, the letters "P&H", the old trade-mark by which the company and its products became known, were retained.

U. S. Steel division names regional managers

The American Bridge Division, U. S. Steel Corp., Pittsburgh, Pa., has appointed five to the newly created post of regional contracting manager. Those named are J. H. Long, in charge of the Eastern area, with headquarters in New York City; D. J. Morfee, Central area, Pittsburgh; P. J. Larson, Midwest area, Chicago; Walter Schielke, Southern area, Houston; and J. C. Hamilton, Western area, Los Angeles.

←For more facts, circle No. 214



Working on a bench formed by blasting off a pinnacle of rock, an American stiffleg handles surge-

tank excavation hoisting. The leveled area along the North Platte River, right, is the powerhouse site.

(Additional photo on front cover)



The American Terry stiffleg, powered by a 3-drum hoist, uses a 125-foot boom to bring rock up from the surge-tank excavation. The completed tank section will be lined with concrete to a 40-foot inside diameter.

Power tunnel carved from granite for Fremont Canyon project

**One jumbo works two headings to drill rock in long tunnel;
providing access to surge tank, powerhouse site is big job**

by **RALPH MONSON**
field editor

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207-foot cut and cover section between the two sections of the power tunnel of the Fremont Canyon Power Project near Alcova, Wyo., a Plymouth locomotive switches muck cars.



The rail-mounted jumbo used to drill both headings completes its work in one of the tunnels. An air motor on the jumbo drives the hydraulic pumps to provide power for the G-D hydraulic jibs.



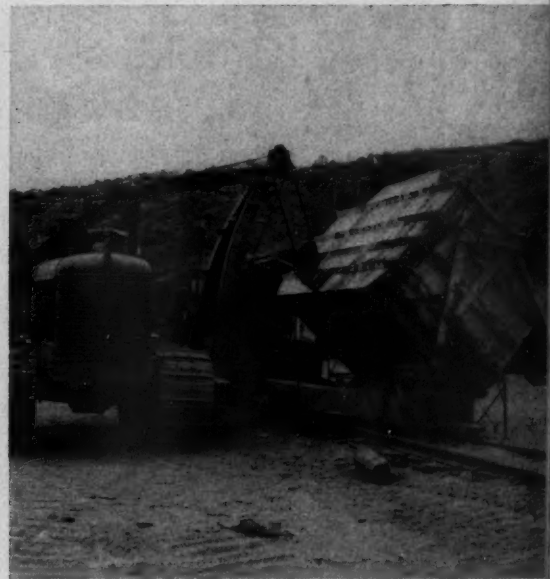
Loading is done from the jumbo platforms, with delays arranged for maximum fragmentation. Drilling and loading took just over 1½ hours.



After the shot, miners bar down loose pieces from the roof. In the job, the jumbo drilled a round at one heading, then the other heading while the first was being mucked.



One of the electric-powered Conway Model 100 mucking machines on the job chews into the rock. The muck goes by conveyor to a car coupled to the mucker.



At the dump area, muck cars are tipped by an Allis-Chalmers HD-14 tractor with a special shoe and side boom. The shoe grasps the frame of the car to hold it on the rails.

Mining both ways from a central cut and cover section with a single drilling jumbo, tunneling crews have punched a 21-foot-diameter tunnel through three miles of solid granite for the Fremont Canyon Power Project. Located on the North Platte River near Alcova, Wyo., about 45 miles southwest of Casper, the job also called for twin 14-foot-diameter penstock tunnels and portions of the surge tank and powerhouse site to be blasted out of the solid granite of the mountain.

The Fremont Canyon power plant and power conduit are being constructed by a joint-venture contractor known as Coker-Kiewit-Cunningham. The combine includes Coker Construction Co., Peter Kiewit Sons' Co., and Condon-Cunningham, all of Omaha, Nebr. The \$14,434,000 contract covers part of the Glendo Unit, Missouri Basin Project, of the U. S. Bureau of Reclamation.

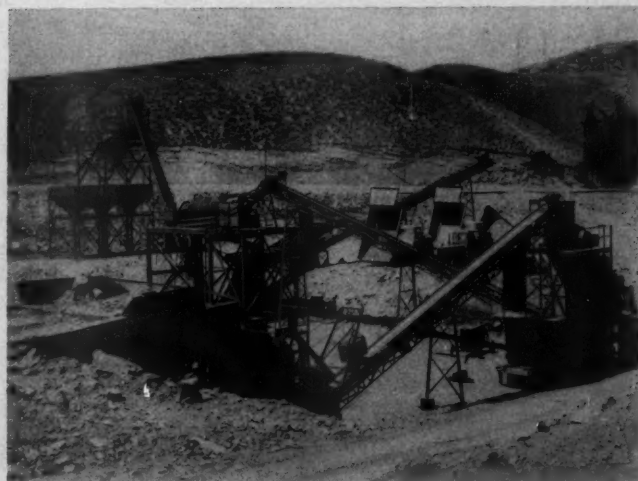
Taking its water supply from the

existing Pathfinder Reservoir, the project will develop the 325 feet of head available between the reservoir and Fremont Canyon, about three miles downstream. The project is expected to be finished by the middle of next year. The reservoir is created and controlled by Pathfinder Dam, which was constructed by the Bureau in 1909 and has served since as a storage and regulating unit.

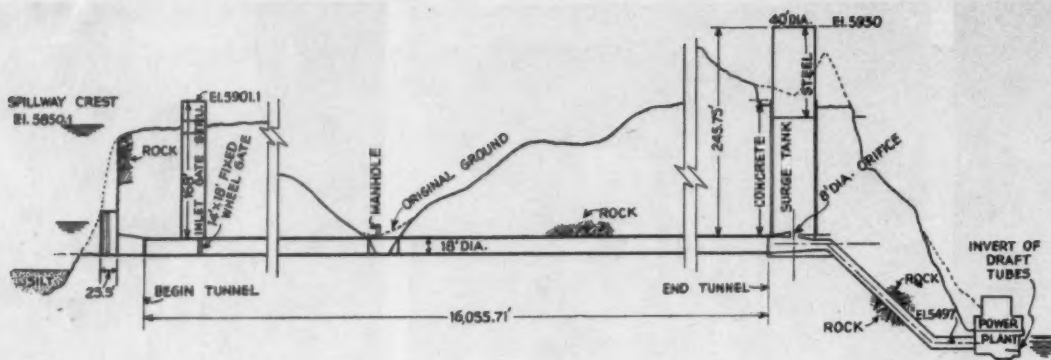
With the water level drawn down to accommodate the construction, trash racks and an intake structure are being built in the reservoir. From this structure, the tunnel will extend 207 feet into the granite mountainside to an inlet gate chamber that has a vertical shaft leading to the surface. From this point the tunnel bends to approximately parallel the river and penetrates nearly a mile through the mountain to break out in a narrow gorge.

At this point, the conduit becomes

(Continued on next page)



The muck pile serves as the source of aggregate for the Tel Smith plant producing concrete aggregates for the tunnel lining and other work. "Eucs" dump to an apron feeder feeding the primary jaw crusher. Sand is produced in a sand classifier and washer. Coarse aggregates go through a screen to the three 40-yard surge bins.



Power plant data

Two units, with installed capacity of 48,000 kw at a 352-foot maximum head.
33,500-hp turbines at 257.1 rpm and 300-foot design head.
25,263-kva generators at 11,500 volts, 0.95 p. f. and 300-foot head.
213 million kwh annual generation.

Knuckles right down to any job!

This rugged heavyweight asks no quarter, it just wades right in and polishes off tough hauling jobs. Two high-capacity "live" rear axles give it better flotation and traction on soft ground. And its 234-hp. engine, with dual carburetors standard, gives this T900 tractor the big-chested power to handle the big hauling jobs without tiring.

The new Dodge tandems are packed with features that make heavy-duty hauling easier and more profitable: New instrument clusters, with tachometer and graduated ammeter and oil pressure gauges standard . . . suspended brake and clutch pedals . . . 90-degree-opening hood for easy servicing . . . air brakes standard on T900 models . . . up to 20 speeds forward. But see your Dodge dealer—and get the heavy-duty reasons why . . .

today,
it's real smart to choose **Dodge Trucks**



Built throughout for dependable heavy-duty service, this 354-cubic-inch V-8 has dome-shaped combustion chambers . . . double rocker-arm shafts . . . precision timing gears instead of chains . . . positive exhaust-valve rotators . . . hydraulic tappets . . . sodium-cooled exhaust valves. And it develops full power on thrifty regular gas!

For more facts, use Request Card at page 18 and circle No. 215

(Continued from preceding page)

a cut and cover section for 267 feet across the valley to the portal of the second tunnel. It is this cut and cover section that provided the contractor with access to two tunnel headings.

From this opening, the tunnel continues more than two miles through the solid granite mountain to a junction with a 45-foot-diameter surge tank that was excavated more than 155 feet down into the rock. From the surge tank, twin 14-foot penstock tunnels lead down to the powerhouse site, which is a very small flat area beside the river at the base of the sheer rock sides of Fremont Canyon.

The main pressure tunnel is lined with concrete to an inside diameter of 18 feet, while the penstocks will have steel liners 10.75 feet in diameter. The section of the surge tank excavated into the rock will be lined with concrete. Above that, a 40-foot-diameter steel section will extend for another 114 feet to make a total height of 257 feet of surge tank above the roof of the tunnel.

Work both ways

The joint-venture contractors, sponsored and spearheaded by Coler, set up a very efficient system for the rapid excavation and lining of the tunnel. Headings were driven in both directions from the cut and cover section. A narrow-gauge railroad was built to the headings with a big way at the junction of the two tunnels.

Below the cut and cover section of the conduit, the valley widens out and becomes deeper, providing room for the contractor's headquarters. Along one side of this valley, the contractor set up shops, offices, and supply and material yards. The railroad was extended into these yard and shop areas. On the other side of the widening valley, the railroad was carried out at a nearly level grade to provide a line to the waste dump for the tunnel muck.

After the tunnel excavation was well under way, the contractor set up an aggregate production plant to convert the tunnel muck into concrete aggregate. Then a concrete batching plant was erected to proportion the mix for the tunnel lining and other concrete structures.

Use only one jumbo

The one rail-mounted jumbo, which handled all of the drilling in both headings of the tunnel, carried ten Gardner-Denver hydraulic jumbos mounted on three levels. Each jumbo handled a Gardner-Denver Model 70 drill fitted with Brunner & Lay 1 1/2-inch carbide-insert Rok-Bits. An air motor on the jumbo drove the hydraulic pumps to provide power for the hydraulic booms.

Working from the platforms of the jumbo, the crews loaded each round with about ten cases of Du Pont 40 per cent gelatin dynamite primed with Hercules millisecond electric primers. Delays were arranged to produce maximum fragmentation of the hard granite rock, which had a tendency to break out in chunks.

CONTRACTORS AND ENGINEERS



The rail-mounted jumbo is rolled into the contractor's yard for maintenance and inspection. It carries ten Gardner-Denver hydraulic booms, each equipped with a G-D Model 93 drill.

larger than the mucker could handle.

The shots were detonated with the 440-volt current through a double safety-switch arrangement after the jumbo had been pulled back a safe distance from the heading. The 10-foot round, consisting of 96 holes, was drilled out and loaded in an average time of just over 1½ hours.

In the early stages of the tunneling, the drilling crew drilled and loaded a round in one heading. Then, while this round was being mucked, they pulled the jumbo out of that tunnel and pushed it into the heading of the other tunnel to drill a similar round there. In this operation, a drilling and loading crew did just these phases of the work in both tunnels while the mucking crews alternated with them.

Since the westerly tunnel between the reservoir and the cut and cover section is less than half as long as the easterly segment, the westerly section was completed as far as was practical well in advance of the easterly section. From that time on, the jumbo remained in the easterly tunnel, and the operation followed the more conventional routine, with the same crew drilling, loading, shooting, and mucking.

The day shifts usually pulled two rounds; two night shifts pulled three more for a daily average of close to five rounds per 24 hours. Progress actually hit about 47 feet per day.

Ventilation is difficult

Ventilating air was blown to the headings by two 125-hp Roots-Connorsville blowers through a 26-inch steel duct. This provided an air movement of 50 feet per minute in the tunnel. While the headings were within a few thousand feet of the portals, the bad air and fumes from each shot could be blown out through the portals in a relatively short time.

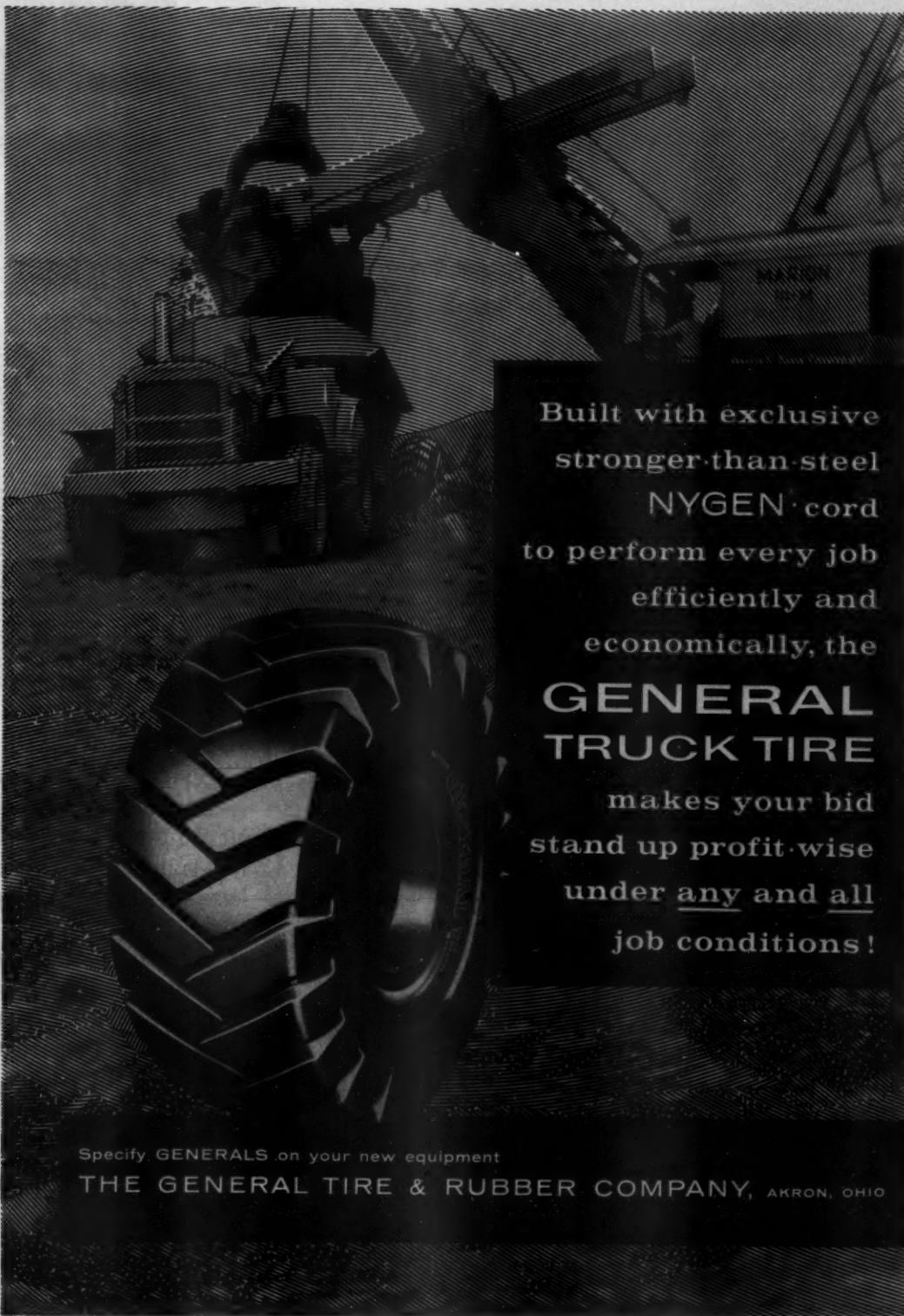
As the easterly heading moved progressively farther from the portal, and time lost waiting for the fumes to be blown out became excessive, the procedure was changed so that, immediately after a shot, the blowers were reversed for a period of 20 minutes. During this time, the worst of the fumes and dust were sucked out of the tunnel. Then the blowers were switched to normal input again, and within 10 minutes the heading was clear enough for the mucking crews to begin work.

This arrangement left several "plugs" of not-too-good air in the

(Continued on page 27)



Below the cut and cover section, where the valley widens, are the contractor's headquarters, with offices, shops, and aggregate and concrete plants. Railroad tracks lead from the cut and cover section to muck piles in the distance.



Built with exclusive
stronger-than-steel
NYGEN cord
to perform every job
efficiently and
economically, the
**GENERAL
TRUCK TIRE**
makes your bid
stand up profit-wise
under any and all
job conditions!

Specify GENERALS on your new equipment
THE GENERAL TIRE & RUBBER COMPANY, AKRON, OHIO

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... says M. B. Killian of Killian-House Company in San Antonio, Texas, who promptly ordered two additional BMCO SPR-13's after field-testing his first purchase on Bexar County's Interstate Highway 35 expressway. "Use of the SPR-13's on this project of seven contracts amounting to \$12,000,000 and involving 2,000,000 cubic yards of flexible base, has enabled us to cut compaction time and costs, and put the project well ahead of schedule," reports Jack House of Killian-House.

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One of the initial jobs at the site was the construction of this inclined railway at a 45-degree angle to serve the surge-tank excavation site. The stiffer used in hoisting excavated material had to be brought down the railway piece by piece and assembled at the site.

(Continued from page 25)

tunnel at all times; one of these plugs was not able to reach the portal by the time the next shot was fired. However, frequent tests proved that the plugs contained less than harmful concentrations of gases. Excluding the workmen who entered or left the tunnel at the beginning and end of shifts, only the switching crews were subjected to the gases.

Air for the power tools in the tunnel was provided by three Joy WN-114 compressors, powered by 300-hp electric motors, and rated at 3,600

cfm. These machines were located in a compressor house in the shop area, and the air was piped to the headings in an 8-inch line. A 4-inch line brought water under pressure to the headings, while a 6-inch line carried seepage and other waste water out of the tunnel.

Mucking

As soon as the air cleared, the mucking crew moved up to the heading with a Conway Model 100 mucking machine that loaded the rock into 10-yard side-dump cars. The Conway mucker is an electric-powered machine with a front digging bucket that discharges onto a conveyor belt. The belt carried the muck back into a car coupled to the mucker. Three of these machines were on hand during the job, although only one was in use most of the time.

Ordinarily, the mucking crew could load out the 20 to 23 cars of muck in about two hours. During this same period, skilled workmen were barring down all loose and fractured rock from the tunnel sides and top and checking the remainder for stability. Where necessary, 10-foot roof bolts were installed to prevent a fall-in. Only a very small amount of timbering was required at the portals and in a few bad sections.

Hauling the loaded muck trains up the 0.4 per cent grade from the easterly heading to the portal took the combined effort of two Plymouth 15-ton locomotives on a 6-car train. As the tunnel became longer, the two locomotives had to keep going at top speed to keep from falling behind.

As the muck trains pulled out of the tunnel, the locomotives pushed the cars out to the dump area. Here an Allis-Chalmers HD-14 tractor, equipped with a special boom and side boom, dumped the loads over the edge. The boom, extending out from the frame of the HD-14, engaged the frame of the muck car to hold it on the rails. The line from the side boom then tipped the body of the side-dumping car, opening the hinged door and permitting the load to spill down the slope. This was a sure and quick dumping method. Between muck trains, the tractor was used to keep the track out near the edge of the muck pile.

Excavate surge tank

The surge-tank excavation began on a bench about halfway down the side of the canyon near the powerhouse site. Actually, there was no bench until a pinnacle of rock was blasted off to create one. This bench was completely inaccessible from below except by high scaling methods, and was nearly inaccessible from above.

After building an access road to the top of the canyon rim above the site, C-K-C built a steep inclined rail-

(Continued on next page)



Hard-to-reach places
are easy for

the powerful
Viberette
in prestress
work
in narrow
forms



Gasoline-powered
Model VG shown—
drives and heads
interchangeable with
electric-powered
Model VE.

THE PERFECT SOLUTION for concrete compaction in restricted areas is a Viberette Vibrator with small diameter flexible drive and head with replaceable rubber or steel tip.

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Easy portability and
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keep labor costs to a
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Powerful, 4-cycle, air-cooled, 3 HP gasoline engine. Modern no-slip timing belt drive. Interchangeable heads—1", 1½" and 1¾" diameter. Replaceable rubber or steel tips on 1½" and 1¾" heads. Flexible drive lengths—10' to 20'. Quick release drive connection.



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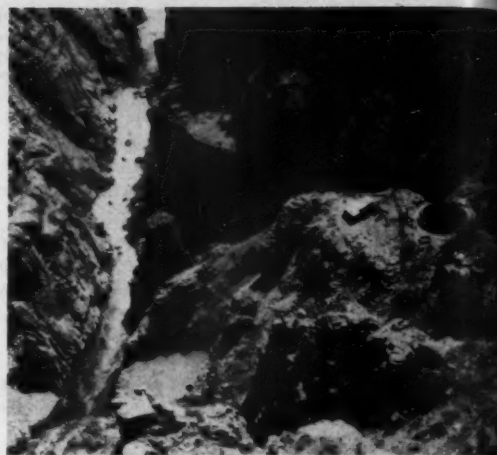
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◀ A blast clears the way for surge-tank excavation. Muck will simply be pushed over the edge of the excavation to the powerhouse site, below, and trucked through the access tunnel to final disposal area.



Rock excavated for the 45-foot-diameter surge tank is hoisted out of the shaft by the stiffleg and dumped over the edge of the bank to cascade down the slope to the powerhouse site.

(Continued from preceding page)

way down to the bench. This track is inclined at an average angle of 45 degrees with the horizontal, and the single car that rides it is raised and lowered by an electric-powered hoist.

An American Terry stiffleg derrick with a 125-foot boom, and powered by a 3-drum hoist, was taken down the inclined railway piece by piece and assembled on the bench to handle the surge-tank excavation hoisting.

Two Gardner-Denver Air Trac drills and five Gardner-Denver S58 jackhammers punched out round after round of blast holes as the 45-foot-diameter shaft was sunk into the rock. A Caterpillar Model 977 Traxcavator with a side-dump bucket mucked the rock into a pair of 8-yard buckets, which were hoisted out of the shaft by the derrick. This muck was simply dumped over the edge to cascade down the slope to the powerhouse site. Later, this material was loaded by a Northwest 80-D shovel into Euclid FD91 end-dumps and hauled out through the powerhouse access tunnel to a final disposal area.

The completed surge-tank section is being lined with concrete to a finished inside diameter of 40 feet.

Nets catch rock

The powerhouse is being built on a very small site beside the river, 900 feet down in the deepest part of the canyon. Before workmen and equipment could even reach the site, crews had to drill a 1,800-foot-long access tunnel on an 8 per cent grade through the mountain. This 20-foot horseshoe tunnel was excavated by Guy H. James, Oklahoma City, Okla., under a separate contract. Conventional methods were used in excavating, and the tunnel is unlined except at the portals.

When the crews finally reached the powerhouse site, they found it not only very limited in area, but also a hazardous spot in which to work. Pieces of rock from the canyon walls above, loosened by natural means or as a result of the drilling and blasting vibrations, rolled down several gullies leading into the site and put the workmen under a virtual state of siege.

To eliminate this hazard, crews first scaled 100,000 yards of rock from the canyon walls, then strung five big rock nets across gullies leading to the

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CONTRACTORS AND ENGINEERS

powerhouse site. High scalers climbed up to the net locations and drilled 2¼-inch anchor holes 6 feet into the rock sides and bottoms of the gullies. No. 11 reinforcing bars, with one end formed into an eye, were securely anchored in these holes.

Bridge cables ¾ inch in diameter were strung horizontally across the gullies between these anchors. Cables were spaced at 18-inch centers to form the horizontal webbing of the nets. Similar cables were installed at 3-foot intervals to form the vertical webbing. These were tied down to anchors at the bottom, and the junctions between all cables were tied with 1½-inch cable clamps. Woven-wire fencing was then placed over the upper sides of the nets and tied securely to the cables. These nets

stopped all rock large enough to cause injury to workmen or damage to equipment.

Powerhouse excavation

The first job on the powerhouse site was to clean up the piles of loose material that had been brought down by the high scalers and dumped over the edge of the surge-tank excavation. This rock was loaded by a Northwest 80-D and an Eimco 2-yard shovel into Euclid FD91 end-dumps and hauled up out through the access tunnel.

The crews then started the 35-foot-deep excavation in the solid granite for the powerhouse substructures. Two Gardner-Denver Air Trac drills using Brunner & Lay Rok-Bits drilled 2-inch holes in about 10-foot lifts.



A crew works on one of the five protective nets to keep loose rock from cascading down the steep bank to the powerhouse site. The men are installing anchor bolts in the rock to hold ¾-inch bridge cables strung across the canyon. Woven-wire fencing completes the net. Cables are spaced at 18-inch centers horizontally and 36-inch centers vertically, and junctions are clamped.

The Series 53 "Jimmy" Diesels

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Smaller and more compact 2-, 3-, 4-, and V-6 cylinder engines based upon the dependable GM Series 71 Diesel

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The holes were loaded with Du Pont 60 per cent gelatin dynamite and detonated with electric caps. Relatively small charges were shot to minimize the danger of rock slides from above.

Since there was little space on the work site, the compressors supplying air to the drills were located at the other end of the access tunnel. Here they could be fueled and serviced easily, and they were completely out of danger from falling rock. A 6-inch line brought the air in through the access tunnel. This air was supplied by two Chicago Pneumatic 900-cfm rotary compressors assisted by a Gardner-Denver 500-cfm machine.

The shot rock was loaded by an Eimco 105 tractor-loader into Euclid end-dumps and hauled out of the tunnel to a disposal area.

Getting the powerhouse excavation down to the elevation of the bottom of the penstock tunnels was the first phase of the work. This made it possible to start mining the two 14-foot-diameter penstock tunnels. However, since this meant excavating below the level of the nearby river, a ledge of solid rock was carefully preserved along the edge of the water to serve as a cofferdam during construction of the powerhouse and penstocks. This will be removed later when the stilling basin is built.

The penstock tunnels, which penetrate 107 feet straight into the canyon wall and then bend up at an angle of 52 degrees, are being mined with a small jumbo carrying four Gardner-Denver hydraulic booms. The mucking is done with a small Eimco overshot mucker. The steel penstock liners will be brought in through the tunnel and installed from above.

Has heavy roof

The power plant is an unusual structure, since it is designed to resist rock falls that may occur in the future. The 95×110-foot building has a series of steel rigid frames at about 18-foot centers; these carry a 12-inch

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For more facts, use Request Card at page 18 and circle No. 219



In the deepest part of the canyon, 900 feet down from the rim, drillers put down blast holes to start excavation for the powerhouse footing. Two Gardner-Denver Air Trac drills are being used, with Brunner & Lay carbide-insert Rok-Bits.

(Continued from preceding page)

concrete roof slab. This deck has a 5-ply membrane waterproofing covered by an additional 2 inches of concrete.

On this waterproofed concrete deck, a 24-inch-deep cushion of sand will be placed, and a double layer of heavy timbers will go atop the sand. First, 6x8 timbers will be laid at 5-foot centers in one direction; then, 8x12 timbers will be laid over them in the opposite direction at 13-inch centers. Asphalt boards and a built-up roof complete the structure.

Since there is no room for a switch-

yard on the ground, a cantilevered deck will carry six big transformers and a single span of wires will carry the power to the top of the canyon.

The contractor will place some 6,500 cubic yards of concrete in the powerhouse structure, but the contract does not include the installation of powerhouse equipment. This has been purchased by the USSR under a separate contract. The 115,000-volt transmission line that will carry the plant's output was constructed by Larson Construction Co., Denver, under a separate contract. This line was completed before C-K-C went to work on the job, and it is being used to deliver 69,000-volt power to the job site for the contractor's use during construction. C-K-C had to build several miles of transmission line and install suitable transformers to serve the several work areas.

Muck makes aggregates

Aggregates for the concrete tunnel lining are being produced on the site by crushing and screening the muck excavated from the tunnel. A Tel-smith crushing and screening plant, producing the two sizes of rock and part of the sand, turned out finished aggregates at a rate of about 150 tph.

A shovel loads "Eucs" from the waste pile, and the "Eucs" haul to an apron feeder feeding the primary jaw crusher. A conveyor carries the material on to a gyratory crusher. Because of the danger of such steel objects as spikes being mixed in with the rock, a powerful electric magnet was placed over this feed belt to collect all tramp iron.

From the gyratory crusher, material goes to a sand separation-washing trammel screen. From here, the minus No. 4 material goes to a sand classifier and washer and then directly to stockpile. The larger sizes go to a 5 x 12-foot triple-deck screen from which the separate sizes flow by gravity to a three-compartment surge bin. "Eucs" haul from these bins to the concrete-plant stockpiles.

About 90 per cent of the sand required is hauled in from Alcoa, 14 miles away. Three Mack 707 Thermodyne trucks pulling Timpette trailers make the haul over the steep grades of the rugged mountain roads.

The concrete batching plant has been rebuilt on the job and in the contractor's shops. Aggregates are delivered from the stockpiles to the plant conveyor by a Michigan 2734 tractor shovel with a 4-yard bucket. The conveyor dumps the rock onto a Tel-smith Vibro-King screen at the top of the plant, where dust and fines are screened out.

Cement is trucked in from Larssen by Verl Harvey, Inc., Adams City, Colo., which is using a fleet of new International trucks with Trailmobile 220-barrel cement trailers. On this rugged haul, however, the rigs usually carry about 110 barrels. At the plant, the cement is stored in two 1,200-bar-



MONOTUBE PILE DATA

PROJECT—Improvement and reconstruction of piers in Manila Harbor

TYPE PILE—FN

TIP DIAMETER—8 inches

BUTT DIAMETER—18 inches

GAUGE—#3

UNSUPPORTED LENGTH—40-

50 feet

DESIGN LOAD—50-60 tons

OWNER—Republic of the

Philippines

DESIGN—Division of Ports and Harbours, Bureau of Public Works

CONTRACTOR—Atlantic, Gulf and Pacific Company, Manila, P.I.

— 2 —

Monotube piles were supplied for this project through a joint venture of the International Cooperation Administration and the National Economic Council under the ICA aid program.

EASY HANDLING with Monotube piles. The strength, rigidity and light weight of the fluted steel Monotube permits a simple one point pick up of this 140-foot pile. The pile being quickly and easily positioned for driving is one of 4310 piles manufactured by Union Metal for use in the improvement and reconstruction of piers in Manila Harbor.

Tapered, fluted Monotube piles are available in lengths, diameters and gauges to meet every requirement. Write The Union Metal Manufacturing Co., Canton 5, Ohio, for complete information.

UNION METAL

Monotube Foundation Piles

For more facts, use Request Card at page 18 and circle No. 220

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rel silos and a 500-barrel silo, all served by a cement screw and bucket-elevator system.

Transit mixers on rails

To deliver the concrete from the batch plant to the tunnel-lining operation, C-K-C mounted 12 new 7-yard Rex transit mixers on rail cars. These mountings were built up right in the job shops. The mixers deliver the dry batches directly to a 7-yard Flocrete machine, and after the concrete is mixed it is pumped into the forms. A full-circle form, designed and built by the contractor, is being used to place the full monolithic lining of the tunnel.

Among the major pieces of equipment on the job are a Manitowoc 3500 crane, a Bay City 25-ton truck crane, a Northwest 80-D shovel, three Cat D6's, three Elmcro 105 tractor-loaders, a Hough Payloader, two Allis-Chalmers HD-6 tractor shovels, a Cat No. 12 grader, a Lorain crane, eight Mack trucks with mixers, plus one P&H crane.

Personnel

Supervising the crew, which sometimes numbered as many as 300 workmen for the Coker-Klewit-Cunning-



Howard Smith, left, resident engineer on the job for the USBR, and William W. Roberts, project superintendent, get together to check on some job details.

ham combine, is project superintendent W. W. "Bill" Roberts. On his staff are project engineer Rolly Allman, tunnel walker Frank Brooks, walker on surge tank and powerhouse John Coyle, office engineer Harold Brown, and safety engineer Roy Rodgers. Al Coker served as project manager for the joint venture.

For the Bureau of Reclamation, project construction engineer is C. S. Rippon; resident engineer on the job is Howard F. Smith; the chief inspector is Frank Carlson; and the office engineer is Richard L. Cummings.

THE END

Sprague & Henwood forms new export subsidiary

Sprague & Henwood Inc., Scranton, Pa., manufacturer of diamond drills, "oriented" diamond bits, and drilling and sampling equipment, has formed a new, wholly owned subsidiary, Sprague & Henwood International Corp. The new subsidiary will handle all export business of the firm.

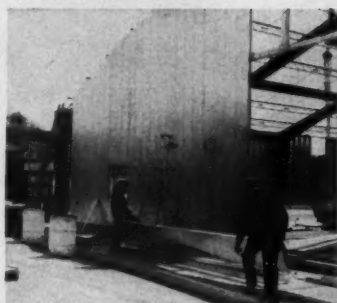
FEBRUARY, 1959

Two Chicago Pneumatic 900-cfm compressors and a Gardner-Denver 500-cfm machine, which supply air for drilling operations, are located outside of the canyon. Air is piped in to the drillers by means of a 6-inch line running through the access tunnel to the powerhouse area.



They Bought Armco Products Installed

Erecting Armco Steel Building



Tunneling with Armco Liner Plates



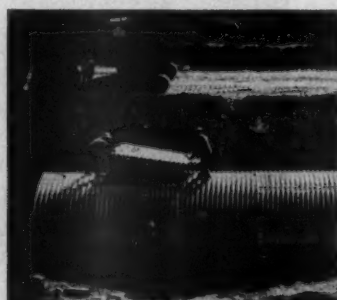
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Assembling Armco Retaining Wall



Constructing Armco MULTI-PLATE®



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...and assured profits, speeded projects, released crews and equipment for other work

Armco Construction Service specializes in the installation of Armco drainage and construction products on a fixed-price, sub-contract basis. This is offered as a service to general contractors who gain the advantages of known cost and quick installation of specialized jobs. In addition, your own equipment and personnel are freed for other work.

This construction service has been used by contractors for the past 28 years. Both equipment and skilled crews are available to handle your jobs quickly and economically. Send coupon for descriptive book. Armco Drainage & Metal Products, Inc., 4509 Curtis Street, Middletown, Ohio. In Canada: write Guelph, Ontario.

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The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

For more facts, use coupon or Request Card at page 18 and circle No. 221



Bob Webb, left, sales manager for Kern-Limerick, Inc., Little Rock, Ark., and president Richard Conner Limerick, Jr., take a break in front of the new company headquarters building. The tractor display has a prominent place in front.

Conner Limerick:

Dealer with a heart for business

Kern-Limerick, Inc., Little Rock, Ark.—the business with a heart.

Although the phrase isn't painted on a sign over the front door, it's written on the faces of the people who work here. It's evident in the concern with which the service manager listens to a customer's complaint.

This seller and fixer of earthmoving equipment is in business to help the customers, to take care of the workers, and, necessarily, to make a few bucks.

Richard Conner Limerick, Jr., carrying on the traditions set by his father, is largely responsible for the policy of plenty of heart and plenty of hard work. During his 12 hours at the office (6 a. m. to 6 p. m.), the 39-year-old president hardly pauses for lunch. While his receptionist goes out for lunch, he grabs a cold sandwich and takes over the front desk. His employees, who may have brought their lunch to work, can relax in the company lunchroom.

Even the cold statistics of the Dun & Bradstreet Report reflect his concern for his workers: "Accounts receivable, employees—\$4,805." When an employee needs a loan, he generally gets it. When a member of the company is in trouble and needs advice, Conner's door is always open.

Customers' troubles are his troubles, too. Once, in order to satisfy a customer, he spent \$6,000 of the company's money to repair a secondhand tractor in order to make good an exaggerated claim of one of his salesmen. His service and parts departments are organized to solve the customers' problems as fast and as cheaply as possible.

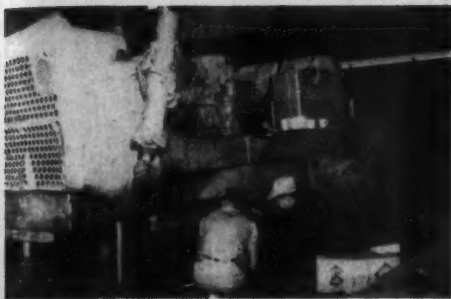
Conner's generosity and desire to please have sometimes lost money for the company. In fact, the firm is currently paying off a large equipment loan made to a contractor who went broke.

Even Conner admits, "I wish I had more of the sternness and good judgment that my dad mixed with his kindness. He was a grand gentleman. He passed away last spring, you know.

"And now I'm trying to fill his shoes. At first I thought it would be easy. I had a lot of ideas about how I was going to expand the business: push the sales, add new buildings. Well, you know, the longer I run this



INTERNATIONAL TRUCK



A major overhaul job on a tractor is handled in one of the five repair bays of the shop by company mechanics. A total of 14 mechanics stands ready to tackle repair work.



The repair bays open on a large equipment lot at the rear of the building, allowing repair crews to work outside. Under a new program, mechanics receive on-the-job training to keep them abreast of new equipment developments.

TOUGH AND READY

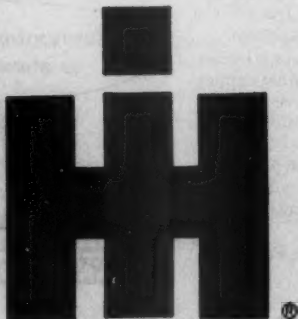
Where
muscle
makes a road!

Built for keeps to keep highway building on the move, this INTERNATIONAL model RDF-230-H is tough . . . ready to go anywhere, do anything!

A high-torque, low rpm Cummins NH-series diesel engine and rugged axles (46,000 lb. tandem rear and 15,000 lb. front) bull back-breaking loads over washboard terrain with sure dependability — round the clock, if necessary.

Take a good look at its extra-heavy-duty diamondette sheet metal, heat-treated alloy double-channel frames, simplified steering geometry that makes for flat angle, low friction ease of handling. You'll know why more heavy-duty construction operators are counting on this INTERNATIONAL Truck.

See your INTERNATIONAL Dealer today! He's got the know-how and the truck that's got it for your job!



INTERNATIONAL HARVESTER COMPANY, CHICAGO
Motor Trucks • Crawler Tractors
Construction Equipment • McCormick®
Farm Equipment and Farmall® Tractors

Cost least to own!

For more facts, use Request Card at page 18 and circle No. 222

business, the more I realize how much good sense my father had. I can see now that it's risky to grow too fast. Slow, all-around growth is best."

Company started in 1928

Conner's father, R. C. Limerick, Sr., started the business back in 1928 in partnership with Robert A. Kern. The partnership continued until the firm was incorporated in January, 1929. Operating with conservative business policies, the Little Rock company gained a good reputation and grew steadily.

While Limerick was busy with the business, his only son, Richard Conner Limerick, Jr., was busy studying law at the University of Arkansas. In 1941, Conner graduated with an LL.B. degree.

It wasn't many years later that he became a successful attorney in the Little Rock firm of Rector, Cockrill, Limerick & Laser. He liked law and was a good attorney. Yet, in 1955 he chucked the whole practice and accepted a position as secretary-treasurer in his father's company. Why?

"Well," says Conner, "I know it seems strange, particularly since I like law. But there are other things that I also like. I like the idea of building a business that I can hand down to my son. In a law practice, this is not possible. In a dealership, it is. Also, I knew Dad was getting along in years, and I was the only one left to take over the business. I didn't like to see his lifetime's work lost to the family—so I made the change. And I'm glad I did. I love this work."

Conner also loves his family—his wife, two daughters, and one son. Long hours of hard work have made Conner look perhaps a little older than his 39 years. His round face, normally rather thoughtful and concerned, occasionally breaks into a gentle smile.

New headquarters building

In the past few years, Conner's enthusiasm for his work has resulted in some big changes for the 30-year-old company. Last year the firm moved into spacious new headquarters at 6723 Asher Ave. on the outskirts of Little Rock.

With 13,500 square feet of floor space, the modern offices and adjoin-



About \$200,000 worth of spare parts is kept on hand in the new 6,600-square-foot parts warehouse. A numbering and lettering system is used on the rows of bins so that parts can be located easily.



(Continued from preceding page)

ing repair shops give the employees a better place to work and the customers a more pleasant place to do business. The 6,600-square-foot warehouse, recently completed with the help of company men, gives the organization plenty of room to store spare parts. On the 4-acre site there is also ample room for customer parking and used-equipment display. Kern-Limerick handles primarily

earthmoving equipment. Allis-Chalmers dozers, graders, and scrapers make up the main line. Other lines of equipment include Inley shovels, Heco cranes, Leschen wire rope, Tractomotive loaders, Worthington compressors, and Madsen asphalt plants. The company's nine salesmen, headed by sales manager Bob Wells, cover most of the state of Arkansas, selling primarily to contractors. The remaining 30 per cent of the sales is to counties, municipalities, and industrial concerns. Last year total sales ran slightly over \$2 million.

Mechanics receive schooling

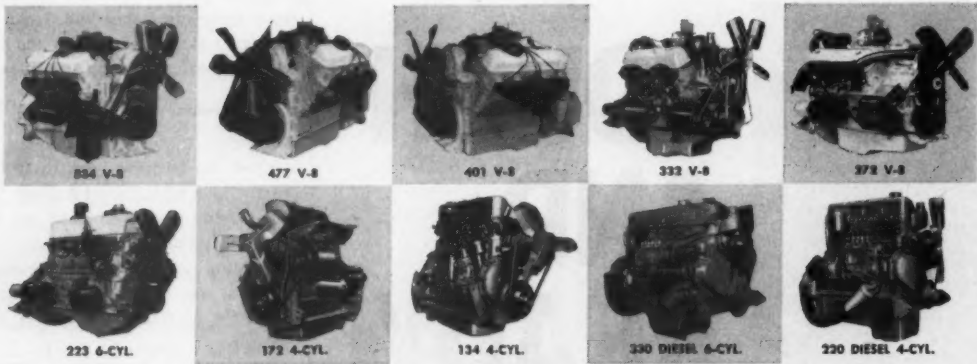
For both shop and field repair service, the organization employs mechanics. Heading this department, as well as managing the office, is Odell Pfeiffer. The field crews make use of four well equipped ¾-ton pickups and one service car. Company-based mechanics utilize five roomy equipment bays and one engine repair room.

In an effort to improve the quality of the repair service, Conner has recently hired a technician to teach company mechanics as they work. The on-the-job training not only makes better mechanics, but it makes more satisfied workers. When the technician is not actually teaching, he works as a mechanic.

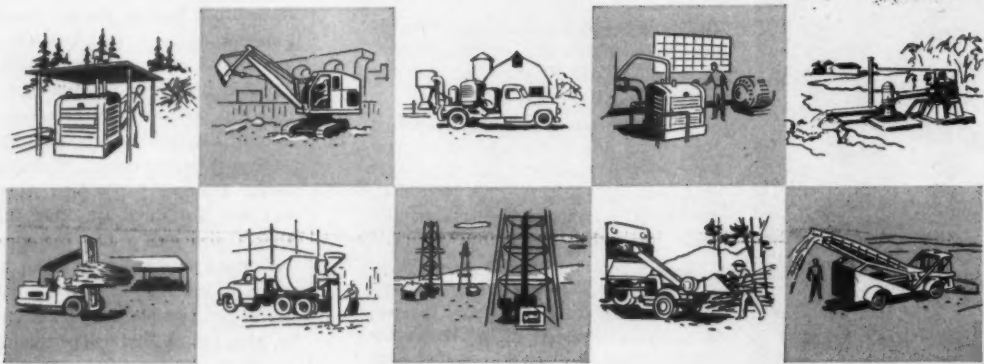
Regarding the training of mechanics, Conner also adds, "We are fortunate in having Allis-Chalmers for our manufacturer. Each year they offer a one or 2-week course at their plant for training our mechanics. They pay for the school and we pay for the living expenses.

"Just the other day, one of these 'schools-on-wheels' stopped by here for a couple of days. Their big rig is equipped with models and manuals always to aid in teaching our mechanics. Their instructor passes on new ideas about equipment repair and tells our mechanics how to fix a new line of A-C equipment. It's quite a deal."

(Continued on page 27)



NOW...TEN FORD INDUSTRIAL ENGINES TO MEET YOUR POWER NEEDS!



Whatever your application, consider the many advantages you get with a Ford Industrial Engine.

Completely modern throughout, all Ford engines have Short Stroke design for increased operating economy... overhead-valve construction for quick, easy servicing... and provide more horsepower per pound of engine weight than ever before possible. To cut costs on big jobs, Ford offers 3 new Super Heavy Duty V-8's with totally new lubrication-, cooling-, and fuel-systems.

Ford Industrial Engines range from 134 to 534 cubic inches... including two Diesels. All are available as engine assemblies or power units, and can be fitted with Ford-approved attachments such as SAE housings, torque converters, transmissions and other equipment for special operating needs.

What's more, Ford users enjoy a minimum of downtime because there's always a Ford Dealer nearby with a complete stock of the more commonly purchased replacement parts. Yours at low Ford prices.

Get the right power for your application. Check Ford's full line of 4-, 6-, and V-8-cylinder engines soon.



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YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

For more facts, use Request Card at page 18 and circle No. 223



In the dealer's engine repair room, a mechanic calibrates an injection pump on the American Bosch fuel-injection calibrating stand.

CONTRACTORS AND ENGINEERS

This great performance story began more than two years ago—and it's getting better all the time!



Toquepala is a project of the Southern Peru Copper Corporation, which is stripping more than 120 million tons of overburden to reach the actual ore deposit at the mine.

MORE THAN 50 ALLIS-CHALMERS HD-21's ARE HANDLING TOQUEPALA'S TOUGHEST JOBS FOR UTAH CONSTRUCTION COMPANY AND MORRISON-KNUDSEN COMPANY, INC.

Working up to 14,000 feet high in the Peruvian Andes, to develop a large mining project for the Southern Peru Copper Corporation, these tractors have been constructing roads . . . building railroads . . . preparing sites for entire new towns.

They've faced some of the toughest conditions in the world . . . rock, sand, dust, cold and high altitude all rolled into one. After two years of round-the-clock operation, these machines have piled up an outstanding per-

formance and on-the-job record.

The Toquepala story is another good reason why you should have all the facts on the new HD-21. Across America, as in the Andes, leading construction men are discovering that the HD-21 is the long-life, big-production crawler tractor they've been looking for. See your Allis-Chalmers construction machinery dealer. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



move ahead with **ALLIS-CHALMERS**

...power for a growing world

At sea level... or 14,000 feet up

Allis-Chalmers HD-21's are the tractors for your tough jobs



Big Allis-Chalmers tractor-dozers cut the rocky, mountain country to size to build roads... railroads... and to develop sites for entire new towns.



Men and machinery conquer the mountain-top desert... push aside rock and sand to build access roads.



HD-21—225 net engine hp; torque converter drive; 56,260 lb (approx. as shown)

You, too, can have the outstanding performance Utah Construction Company and Morrison-Knudsen Company, Inc. are getting from the more than 50 Allis-Chalmers HD-21's at Toquepala. Call your Allis-Chalmers dealer now. He will demonstrate the HD-21 on your job at your convenience.

move ahead with

ALLIS-CHALMERS

...power for a growing world



CRAWLER TRACTORS • MOTOR GRADERS • MOTOR SCRAPERS • TRACTOR SHOVELS • PULL-TYPE SCRAPERS • MOTOR WAGONS • UTILITY TRACTORS • POWER UNITS

Distributor names

(Continued from page 34)

The parts department, headed by C. B. Brooks, Jr., has a new 6,600-square-foot warehouse for the efficient storing of about \$200,000 worth of spare parts. Emergency orders for parts not in stock arrive via air freight on the morning after the order has been phoned in. Brooks, who has worked for the company for 16 years, is one of many employees who has grown up with the company.

Team effort

Conner is the first to admit that his efforts to keep the company doing a good job are small compared to the group effort of the 40 employees. "It's only with their help, and the help of my department heads—Webb, Pfeiffer, and Brooks—that we stay in business. I'm kind of like a grease monkey. I just hang around and keep the machinery oiled and running."

As for business trends in his part of the country, Conner reports, "things are looking up. Through August of last year, we had sold more equipment than in all of 1957."

"That federal 'shot-in-the-arm' making funds immediately available for secondary roads helped out a lot. The weather's better. Contractors and public are more optimistic. Yes, things are looking up." THE END

Worthington names three

Three new dealers have been appointed by the Worthington Corp., Harrison, N. J. Mid-Continent Equipment Co., 3105 Highway 75 North, Sioux City, Iowa, is distributor in 11 Iowa counties for the firm's line of truck mixers, portable and big mixers, contractor's pumps and tools, pneumatic placers, pavers, portable rotary compressors, and mobile drills. The Braml Pump & Supply Co., a division of John R. Bradshaw, Inc., 22165 Winchester St., Keene, N. H., handles the firm's Blue Brute contractors' pump line throughout that state. Transportation Equipment Co., Inc., New Orleans, La., is distributor for truck and big mixers in 38 Mississippi counties and the Louisiana parishes of Vermillion, Acadia, St. Landry, Pointe Coupee, and all eastern parishes.

Western Machinery news

H. A. Myers has been appointed operations manager of the Denver office of Western Machinery Co., San Francisco, Calif. He will be responsible for all company sales in Colorado, and will administer the distribution of a newly enlarged line of concrete aggregate processing equipment made by WEMCO, a division of the firm.

Edward G. Oman has been named sales manager of the Spokane, Wash., office of Western Machinery, which is a distributor of construction and road-building equipment.

For more facts, use coupon or circle No. 225—

Eight dealers for FWD in U. S. and Canada

Six American and two Canadian dealers have been appointed by the FWD Corp., Clintonville, Wis., to sell its line of multiwheel-drive trucks and other specialized vehicles. Allen Equipment Co., 1432 N. 16th St., Fort Dodge, Iowa, will sell to county and state highway departments and airports in 33 north-central Iowa counties.

Capitol Trailer & Body Co., 200 N. 31st St., Springfield, Ill., will serve 15 south-central counties in that state; Deseret Dodge Truck Center,

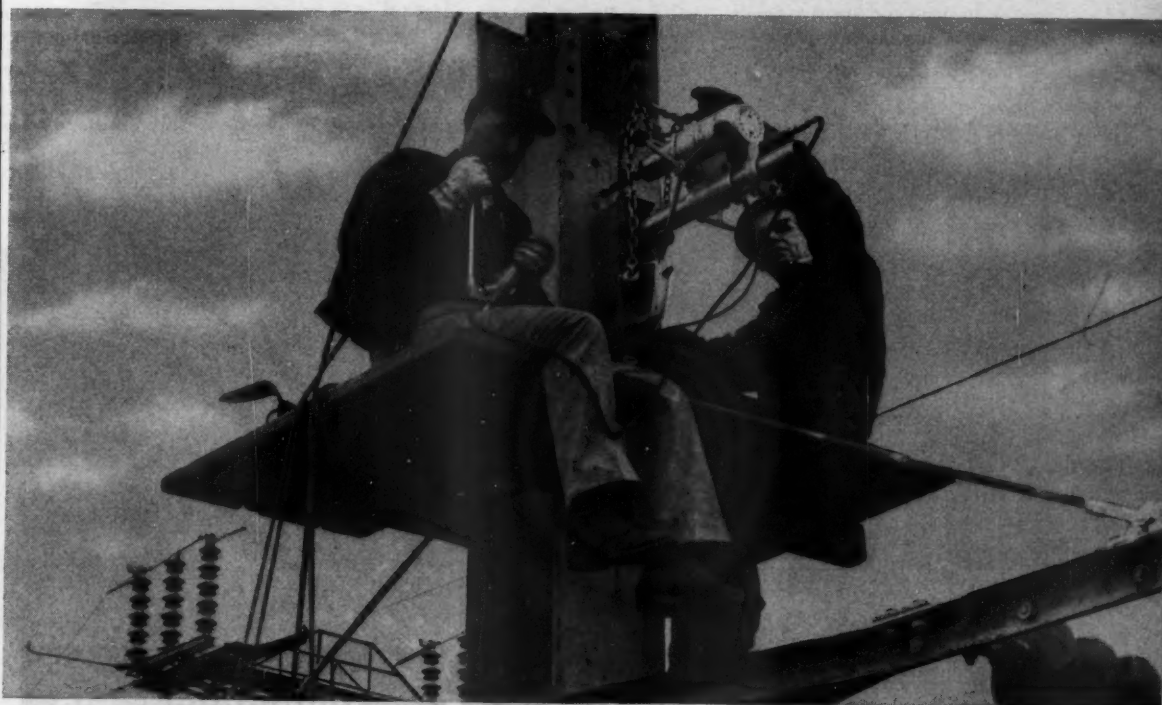
Inc., 2299 S. State, Salt Lake City, Utah, will cover four southwestern Wyoming counties, three southeastern Idaho counties, and all of Utah except for two southeastern counties. W. W. Hicks, Duncan, Okla., will sell to makers of special truck-mounted oil-field equipment; Rapid Equipment Co., 605 Steele Ave., Rapid City, S. Dak., will cover the western part of that state; and Harlan Shinkle Truck Sales, 2922 S. Adams St., Peoria, Ill., will handle 14 west-central Illinois counties.

Bogue Tire Service, Woodlawn Road, Guelph, Ont., will sell in that city and the surrounding area; and

G. W. Titus, Edmundston, N. B., will cover New Brunswick and Prince Edward Island.

Johnson Co. appoints two

The C. S. Johnson Co., division of Koehring Co., Champaign, Ill., has appointed the Texas Machinery & Equipment Co., Inc., 750 N. Grand, Amarillo, Texas, to handle its mobile and stationary batching plants, clam-shell buckets, and Koehring-Johnson concrete mixers. Texas Machinery, from its Amarillo headquarters and Lubbock branch, now handles the complete line of Koehring products



Job hard-to-reach, hard-to-handle? Send for a B&D Magnetic Drill Press!

Save hours . . . even days on every job . . . one use may pay for the tool!

Whether your job is production, construction or maintenance, a Black & Decker Magnetic Drill Press sticks like glue to the job. Lets you stand off and guide the bit from a distance. And it takes just finger-pressure to drill even a 1 1/4" hole with Black & Decker's exclusive Hydra-power Feed.

See one on your work. Two sizes to choose from: 3/4" and 1 1/4"; both complete precision units—not attachments. Perfect for drilling, reaming, tapping in tool shops, steel fabricating, maintenance—anywhere you need a drill press but can't take the work to the tool.



B&D 1 1/4" MAGNETIC DRILL PRESS works high overhead upside down; enables maintenance man to get into tight spots easily, rapidly.



TAKE 'EM ANYWHERE you need a drill press. Both are light weight, easily transported, simple to put to work; move to the next job.

B&D 1 1/4" MAGNETIC DRILL PRESS works upright on huge Air Chuck drilling and tapping; ready for instant moving to next operation.

B&D CADDY CART is the perfect way to transport your Magnetic Drill Press from job to job. Prevents damage to this peak precision tool.



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- ☐ Send me additional information
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Name _____ Title _____

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City _____ Zone _____ State _____

- ☐ Impact Wrenches
- ☐ Hammers
- ☐ Belt Sanders
- ☐ Drills

manufactured in the United States. Paul E. Wiese, 1125 Elmwood Ave., Columbus, Ohio, has been named exclusive distributor in that state and three Kentucky counties for the firm's line of batching equipment and Koehring-Johnson construction mixers. He will also handle Johnson clamshells on a nonexclusive basis.

Concut Sales news

Concut Sales, Inc., El Monte, Calif., has appointed Concut Mid-America, Inc., 5738 N. Lincoln Ave., Chicago, Ill., as their franchised distributor in the midwestern states. The new dealer handles the firm's complete line of concrete sawing machines, as well as diamond and abrasive blades for concrete and masonry sawing.

B-E names dealer; revises territory

Seabrook Machinery, Inc., 625 W. Gaines St., Tallahassee, Fla., has been appointed an excavator distributor by the Bucyrus-Erie Co., South Milwaukee, Wis. The dealer will cover 13 Florida counties and all Georgia counties south and west of and including Stewart, Webster, Sumter, Crisp, Turner, Ben Hill, Coffee, Atkinson, and Clinch.

The territory of the Sim Grady Machinery Co., Macon, Savannah, and Chamblee, Ga., has been revised by the company. The dealer's territory includes north, central, and southeast Georgia, with the exception of Dade, Walker, Catoosa, and Whitfield counties in the northwest. These

four counties have been assigned to Power Equipment Co., Knoxville, Tenn.

Hedge & Matteis moves

A new regional warehouse has been opened by Hedge & Matteis Co. at Route 106, Sheep Davis Road, Concord, N. H. The dealer is exhibiting the latest in construction machinery at the warehouse.

Michigan dealer for Clark

Reynolds Machinery Co., 4526 S. 24th St., Omaha, Nebr., has been appointed to sell and service Michigan tractor shovels, dozers, scrapers, loggers, wagons, and excavator cranes made by the Construction Machinery

For more facts on insert, circle No. 211

Division, Clark Equipment Co., Eton Harbor, Mich. The dealer will serve 20 Iowa counties and 9 Nebraska counties.

Parker-Hannifin news

Ritter Engineering Co. of Pittsburgh, Pa.; Bluefield, W. Va.; and Chicago and Moline, Ill., has opened a new branch at 5120 Blue Mound Road, Milwaukee, Wis. The Milwaukee warehouse will be a stocking point for tube and hose fittings, hydraulic check valves, and piston-type accumulators manufactured by Parker-Hannifin Corp., Cleveland, Ohio. J. N. Fauver Co., Inc., 6654 Montgomery Road, Cincinnati, Ohio, is the firm's newly franchised distributor for industrial Gask-O-Seals and industrial Stat-O-Seals.

Bollard names two dealers

The Bollard Asphalt Plant Division of the Colonial Iron Works, Cleveland, Ohio, has appointed two exclusive field sales and service representatives. Rasmussen Equipment & Supply Co., 1960 S. Second St. W., Salt Lake City, Utah, will cover that state. T. E. Potts Equipment Co., Inc., 2260 Sheridan Drive, Buffalo, N. Y., will cover the western part of New York State.

Parsons names new dealer

The Equipment Division of Cox Bros. Truck & Equipment Co., 7119 San Leandro St., Oakland, Calif., has been appointed a distributor for Parsons Co., division of Koehring Co., Newton, Iowa. Covering 15 counties in northwestern California, the new dealer handles all models of the firm's Trenchliner, from the utility 77 to the Parsons 520.

Cummins appoints two

The Cummins Engine Co., Inc., Columbus, Ind., manufacturer of lightweight, high-speed diesel engines for motor trucks and construction equipment, has appointed C. O. Vanzant as manager of the firm's Bronx, N. Y. distributorship. G. C. Caffey, former parts manager of the Memphis, Tenn. distributorship, succeeds Vanzant as manager of the Little Rock, Ark. branch.

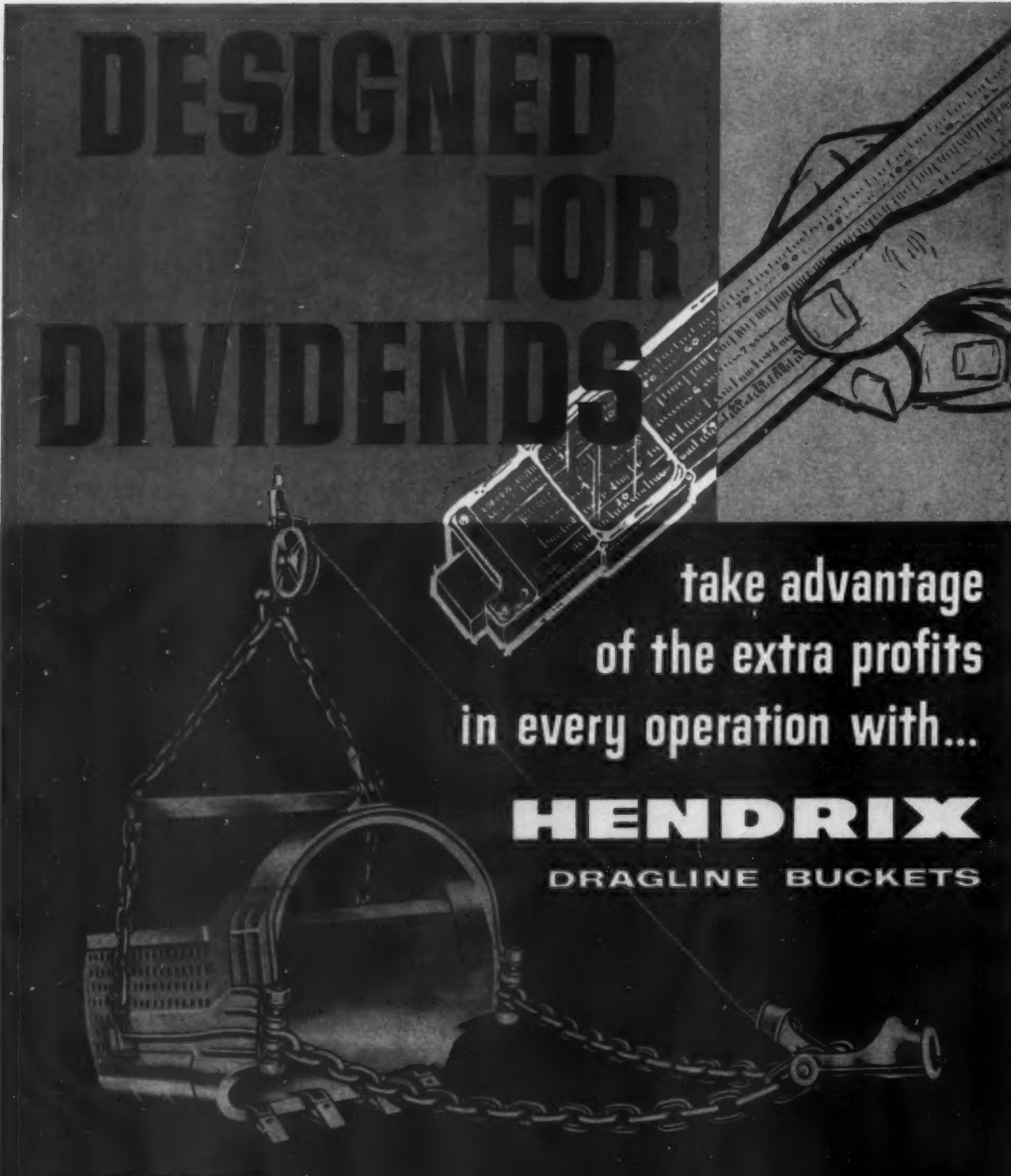
Book on inspection of building construction

"Field Inspection of Building Construction," by Thomas H. McKay, is available for \$9.35 from the F. W. Dodge Corp., 119 W. 40th St., New York 18, N. Y.

The book defines and explains responsibilities for such matters as quality of materials and workmanship, coordination of work by different trades, schedules, storage of materials, provision of utilities and services, safeguarding of work in place, safety precautions, and other vital functions. The book charts through the maze of owner-architect-engineer-contractor-subcontractor relations.

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DRAGLINE BUCKETS

"A Type for Every Digging Purpose... 1/4 to 40 Cubic Yards-Perforated or Solid"

Hendrix
Lightweight
DRAGLINE BUCKETS

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

For more facts, use Request Card at page 18 and circle No. 226

This scraper is one of a fleet operated by Ball and Simpson, contractors of Berkeley, California. The equipment works 16 hours a day hauling 25-ton loads of dirt and rock for a new superhighway. The company keeps this project on schedule by using B.F. Goodrich Rock Service tires. The report: even under tire-killing work conditions, Rock Service tires cut delays to a minimum—give as many as 2,000 hours' service before retreading.



B.F. Goodrich Rock Service prevents unnecessary tire failures!

THE new B.F. Goodrich Rock Service—unlike an ordinary tire—is built to its inflated shape. This FLEX-RITE construction permits *uniform* flexing—no localized stresses that often cause unnecessary tire failures!

Look at the husky double chevron tread. The cleats bite in to give maximum traction and skid resistance in forward or reverse. Under the tread is the B.F. Goodrich FLEX-RITE NYLON cord body. It withstands double the impact of ordinary materials, resists heat blowouts and flex breaks. The B.F. Goodrich FLEX-RITE NYLON body outwears even the extra-thick Rock Service tread, can be retreaded over and over! No wonder the B.F. Goodrich Rock Service tire gives longer service in mine, quarry or dirt-moving jobs!



Western Contracting Corp. operates 2,000 vehicles to build highways, dams and air bases all over the country. Here the job is earth moving for a new runway at Wright-Patterson Air Force Base, Fairborn, Ohio. B.F. Goodrich Rock Service tires have substantially increased hours of service and substantially reduced delays due to tire failure (saving between \$300 and \$600 per hour, the company reports).

opens up new opportunities

Smileage!



Call the district office nearest you B.F. Goodrich tires and tire service

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Atlanta, Georgia	DR. 8-4561	Grand Rapids, Michigan	CH. 1-2609	Oklahoma City, Oklahoma	OK. 2-7462
Baltimore, Maryland	BE. 5-6705	Harrisburg, Pennsylvania	CE. 4-5974	Omaha, Nebraska	OM. 2-7462
Birmingham, Alabama	FA. 2-0364	Hartford, Connecticut	JA. 5-1186	Philadelphia, Pennsylvania	PH. 2-7462
Needham Heights, Mass.	HI. 4-6100	Houston, Texas	CA. 7-5228	Pittsburgh, Pennsylvania	PI. 2-7462
Buffalo, New York	RI. 1258	Indianapolis, Indiana	ME. 7-2508	Portland, Oregon	PO. 2-7462
Charlotte, North Carolina	EX. 9-5621	Jacksonville, Florida	EL. 6-4167	Richmond, Virginia	RI. 2-7462
Chicago, Illinois	ES. 8-8800	Kansas City, Kansas	MA. 1-4400	St. Louis, Missouri	ST. 2-7462
Cincinnati, Ohio	BR. 1-7800	Los Angeles, California	RA. 3-6692	Salt Lake City, Utah	SL. 2-7462
Cleveland, Ohio	PR. 1-0827	Memphis, Tennessee	WH. 8-6761	San Antonio, Texas	SA. 2-7462
Columbus, Ohio	AM. 8-8631	Milwaukee, Wisconsin	DI. 4-5104	San Francisco, California	SA. 2-7462
Dallas, Texas	RI. 1-5601	Minneapolis, Minnesota	LI. 5-2521	Seattle, Washington	SE. 2-7462
Denver, Colorado	TA. 5-1267	Newark, New Jersey	MA. 3-3317	Wichita, Kansas	WI. 2-7462
Detroit, Michigan	CR. 8-7000	New Orleans, Louisiana	VE. 3-7231		

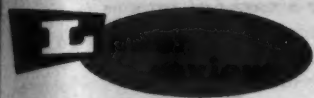
Specify B.F. Goodrich Tubeless or tube-type tires when ordering new equipment. B.F. Goodrich Tire Co., A Division of The B.F. Goodrich Co., Akron 18, Ohio.

Enter the B.F. Goodrich Truck Tire Mileage Contest to win a Thunderbird, or Corvette, or one of 310 other prizes. See your B.F. Goodrich dealer today for entry.

B.F. Goodrich truck tires

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for tire savings
WITH THE NEWEST, BIGGEST OFF-THE-ROAD
TIRE ON THE MARKET TODAY!



Cement masons' locals in northwest Washington accept 50-cent package deal

Cement masons' locals in northwest Washington accepted the same 50-cent package settlement agreed to by the Seattle carpenters and Associated General Contractors.

Rate for cement masons in Aberdeen, Bellingham, Everett, Bremerton, and Port Angeles went up one cent on January 1 to \$3.32 hourly, with an additional 10 cents earmarked for health-welfare. Total initial increase is 19 cents, but 8 cents of the raise has been in effect since September 1, as part of an agreement to end a strike by locals in Seattle and surrounding areas last June. Local 528, in Seattle, agreed at that time to a contract expiring December 31, 1959.

Deferred increases in the new agreement are 16 cents in 1960 and 15 cents in 1961.

Kentucky highway contractor violates Taft Act; NLRB examiner finds

NLRB trial examiner Ralph Winkler found that a Kentucky highway contractor violated the Taft Act by directing newly hired employees to "sign up," allegedly referring to income-tax deduction forms but knowing that the union shop stewards entrusted with this function were simultaneously "signing up" the employees for union membership and dues check-off authorization. This allegedly casual directive, according to Winkler, was interpreted by the employees as an order to sign union cards as a condition for employment.

Average hourly rate for building tradesmen climbs 15 cents in year

The Bureau of Labor Statistics, in its 52nd annual survey of building-trades wage scales, found that the average hourly rate for workmen in larger cities climbed 15 cents from July, 1957, to July, 1958. The average hourly rate for all trades in 52 cities was \$3.34 at midyear.

During the 12-month period, according to the report, union scales were increased for nine-tenths of the building-trades workers included in the study.

AGC renews call for FBI help against job sabotage

Congress this year will be asked to attach a federal-offense tag to the crime of destroying property used on construction projects that are paid for wholly or in part by federal funds.

Particularly interested in such legislation is the Associated General Contractors of America, Inc., which alleges that violence directly attributable to labor unions has increased steadily, particularly in the right-to-work states of the Middle West. In most cases, AGC claims, local law en-

forcement authorities have been powerless to stem such violence, even where local courts have issued injunctions.

In a recent issue of its official publication, *The Constructor*, an illustrated story and editorial pointed up a virulent outburst of sabotage that took place at the site of an interstate highway bridge over the Platte River, 10 miles south of Omaha, Nebr.

The Jensen Construction Co., of Des Moines, Iowa, was awarded a \$662,000 contract to do the job, with

the start of construction scheduled for early September, 1958. According to statements by Mr. Jensen to the Department of Justice, two unions immediately gave notice to the open-shop contractor that certain wage rates and conditions set by the union should apply to the job, and that the firm would not be permitted to build the bridge below the union wage scale. On September 4, a crane which had been unloaded at the job site on the previous day suffered \$18,000 worth of damage from a dynamite

explosion. The following 5-week period, according to Mr. Jensen, was filled with threats to officials and employees of the contractor, barricading and mass picketing of the project site, rock-throwing attacks on vehicles of the contractor, and the dynamiting of the company's home office in Des Moines.

Highlighting Mr. Jensen's testimony to the FBI and the United States Attorney in Omaha was an account of the complete powerlessness of the local sheriff and his deputies.

"We build Sewage Treatment and Water Filtration Plants"

"Schools are our specialty"

"We are building Bridges and Overpass Structures"

"I build Industrial and Commercial"

Each has CONCRETE FORMING PROBLEMS....

ALL are *Profitably* solved

by renting **UNI-FORM Panels**

Whatever the type of job... it will pay you to investigate the **UNI-FORM Rental "Package" Plan**

INFORMATION

Send us a set of plans for a job you're bidding. From these, our Engineering Department will tell you:

1. Total form contact area in square feet
2. Total square feet of forms required
3. Number of ties required
4. Forming recommendations

PLUS a complete proposal, advising what it would cost to rent the complete UNI-FORM "Package" for the job.

PRODUCT

A complete, ready-to-use concrete forming "package" . . . tailored (not adapted) to handle your specific job—on a rental basis. Forms in the most efficient sizes, Ties, Tie Keys and accessories will be included in the proposal.

SERVICE

When you rent UNI-FORM Panels, you get, at no extra cost, the services of Universal Engineers—experienced concrete forming specialists—who provide complete job details, job-site service.

Contractors all over the country depend on UNI-FORM Panels and Universal Engineering assistance to help keep their concrete forming on a profitable basis. Why

not investigate the UNI-FORM Rental "Package" Plan? There's no obligation. Write for details . . . send us your plans.

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Figure 1. Hand probing for a hard layer.

This is the first of a three-part series on basic procedures of soil sampling. It is intended as a simple guide to the builder or contractor desiring fundamental information about currently accepted methods, procedures and tools for soil sampling. The articles deal only with securing of the sample, not with laboratory analysis.

Basic procedures of soil sampling

Sampling techniques and tools

by WILLIAM L. ACKER, President,
Acker Drill Co., Scranton, Pa.



THIS INTERCHANGE, with its varying slab widths and super-elevated curves, is typical of much of today's work on which the self-widening, diagonal-screed Jaeger "JX" finisher is of greatest advantage.

All-hydraulic Jaeger makes finishing easier

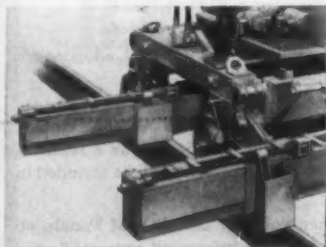
IT DOES EVERYTHING YOU HAVE TO DO ON TODAY'S WORK, including finishing flared and offset widths, pitched slab, super-elevated curves and interchange work requiring frequent lane changes.

And everything it does is performed by hydraulic power — fast, precision-smooth and under fingertip control. Beyond the engine and its master clutch there are no mechanical transmissions, clutches, power-trains, differentials or gearshifts to require maintenance, adjustment or repair. Gear-type hydraulic pumps power every function—the variable-speed traction and screed drives, screed lift and swing, machine self-widening, and transportation wheels.

For finishing pitched slab and super-elevated curves, Jaeger "JX" Type, with hydraulically-adjustable diagonal rear screed, lays the material solidly against the higher form. No conventional transverse screed finishers can do this. For flared slab work, hydraulic self-widening, with infinite width adjustability up

to 6', can be supplied. Hydraulic levers control all these functions.

Ask your Jaeger distributor to give you more information — or send for Catalog F8.



INFINITELY ADJUSTABLE END SHOES: 6' to 36" screed extensions are available, including 36" extensions having end shoes adjustable on screws, turned by ratchet lever. With 36" extensions at both ends of screed you have 6' infinite width adjustability to match 6' telescopic adjustability of machine frame.



CHANGING WIDTH ON OFFSET WIDTH JOBS: Transportation wheels, lowered by hydraulic power, raise one side of finisher to quickly change width to new form setting. On flared slab, changes can be made without raising machine. Telescopic frame can be extended mechanically or by hydraulic power.

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Soil mechanics or soils engineering is a relatively new art. Because of the wide variations in subsurface conditions, few standards have been established, but methods now currently in use may be termed standard, for they have a degree of acceptance by the soils-engineering profession.

The purpose of preliminary or general-survey sampling is to provide relatively simple information on underground conditions with a minimum of time, money, and effort.

While such information is useful and even necessary for preliminary planning, it is rarely used for the actual or final design. In fact, much of today's preliminary sampling is often done by persons totally unaware of the fact that they are engaged in the basic mechanics of soil sampling.

A builder, for example, will make an extra-deep cut across the construction site to determine general conditions; a prospective land buyer will dig a hole to determine the water table; or a contractor will use a steel rod as a probe to trace out a rock profile, Figure 1.

Sampling can also be more involved. If a new factory is to be built, for instance, a series of preliminary tests would reveal whether or not the site is satisfactory. This information would be invaluable to the designer or soils engineer in determining how much detailed exploration will be required and to what depth the final borings must go.

Preliminary sampling saves money

Aside from influencing the extent of final subsurface testing, preliminary sampling can save the owner money by proving that a building site is unsatisfactory or that a contemplated thoroughway bridge site is inadequate. Preliminary sampling also aids the drilling contractor, since it provides a general idea of conditions and helps him establish a more accurate cost per foot for detail borings. Even though local soil conditions are presumed to be known, unfavorable conditions can be confirmed or turned up by a preliminary survey.

Much soils information can be assembled before anyone goes into the field. United States Geological Survey maps or the U. S. Department of Agriculture Soil Conservation Service maps provide excellent soils information. Listed on the back of each Surficial Geologic map is a brief discussion of soils in the area that are

(Continued on page 44)

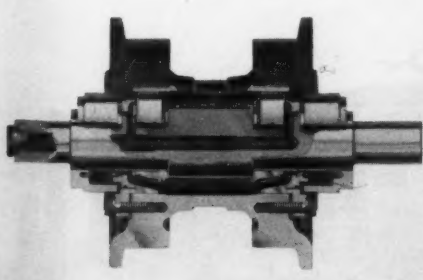


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Figure 2. Iwan auger with sample.



Figure 3. Ship auger with sample.

(Continued from page 42)

suitable for use as fill, subgrade material, etc. Accompanying the Soil Conservation map is a very complete soil survey, with a section on engineering applications that includes complete classification of the soils, both by the AASHTO system and the Unified Soil Classification System. Also included are recommendations as to suitability for use as foundation material, base course, and embankments, plus compaction characteristics.

Aerial photographs show the general topographic features of the area—drainage, accessibility, and existing man-made structures. These photos are not only helpful in planning the survey, but also in presenting a completed report.

The extent, spacing, and depth of the initial exploration will be influenced, of course, by actual information on hand, maps, aerial photographs, and the ultimate use of the proposed site. Good common sense on the part of the planning engineer and crew chief is important. For instance, one authority requires preliminary borings for building sites on 500-foot centers. Still another cuts this down to 100-foot centers. Depth

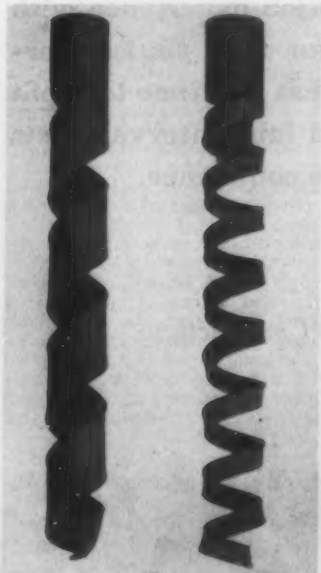


Figure 4. Closed-spiral auger and Jamaica auger.

specifications range from one to two times the greatest horizontal dimension of the building to a vague depth of "a hard footing."

In highway construction, there are no generally accepted standards among soils engineers. Four eastern states have different specifications in regard to test borings of 100, 200, 300, and 500 feet along the right-of-way. One state even goes to 1,000 feet.

With no hard and fast rules, the soils engineer on the survey must have the authority to vary the spacing of sampling as field conditions and results dictate. Unless special conditions prevail, holes are carried to depths ranging from 2 to 6 feet below grade.

Information obtained from general surveys is accurate and valuable.

CP "Power Vane" Rotary Compressors have capacities ranging from 125 to 900 cu. ft. The two-wheel 125 cu. ft. "Power Vane" with length tool boxes is ideal for jobs where maximum portability is a "must." The 900 cu. ft. "Power Vane" below has plenty of reserve for pile-driving or other "heavy air demand" jobs.

CP construction equipment.
"puts the push"

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since it provides positive identifica-
tion of soils encountered, as well as a
reasonable indication of the thickness
and elevation of the different strata.
From such samples, and using the
simplest of equipment, a crew chief or
drill party foreman can log a surpris-
ing amount of excellent information,
including water table, relative diffi-
culty experienced in penetrating vari-
ous layers, presence of boulders or
bedrock, and other physical peculiari-
ties of the site requiring special data.

In preliminary reconnaissance test-
ing, sampling is relatively shallow and
widely scattered. For this reason,
power equipment used is simple, light-
weight, and portable. A wide variety
of hand-operated samplers is availa-
ble for use in rugged, inaccessible ter-
rain. Under these conditions, augering

by hand or portable power equipment
becomes extremely attractive, con-
sidering the fact that such items as
heavy equipment, water supply, and
pump needed for core drilling or
churning and jetting are eliminated.
While augering results are much less
detailed, samples so obtained are in
most cases adequate for the prelimi-
nary survey.

Hand-operated tools: Iwan auger

Probably the most popular single
tool for hand operation is the Iwan
type of auger with handle, Figure 2.
In certain types of soils, particularly
those that are sufficiently stable so
that the hole will remain open, the
Iwan auger can be used to depths of
20 or 25 feet. For soil sampling, the
Iwan is supplied in sizes from 3 to 8

Figure 5. Sample kit
is portable, suitable
for field use.



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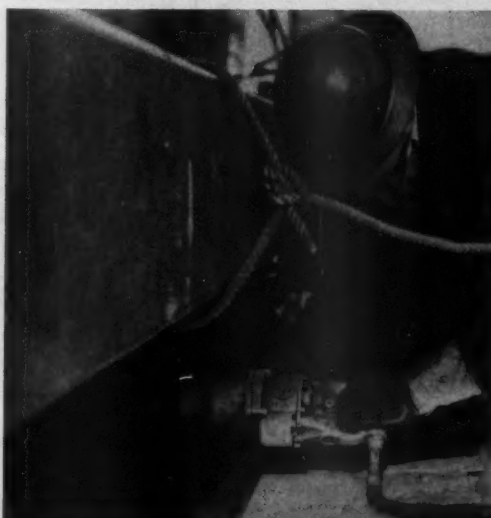
CP Tracdrill tows its air supply; moves quickly and
over rough ground.



CP Sinker Drills hit hard, handle easy, give maximum
penetration and hole-cleaning in the toughest formations.

behind your schedules!

Every piece of CP equipment is built to keep your
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on your schedule! And this same cost-cutting
"care-free" feature applies to every piece of CP
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CP-610 Impact Wrench drives high strength bolts to exact
tightness. No hand-torquing required. Wrench is 1/3 shorter,
25% lighter than tools of equal rating. 1" bolt capacity.

inches in diameter. The sample is ob-
tained by pressing the auger into the
ground and turning it at the same
time. When the blades are loaded
with all the dirt that can be held, the
tool is withdrawn and dumped. Ob-
viously, the sample is badly mixed,
but it is sufficient for identification
and classification.

As the hole progresses downward,
extensions can be added to the auger.
These can be either 3/4-inch standard
pipe in 4-foot lengths or, for deeper
holes where the pipe would tend to
buckle and twist, 1 5/16-inch drill rod
in 2 1/2-foot lengths is available.

Ship, spiral augers

Another popular sampler and com-
panion tool to the Iwan is the ship
auger, Figure 3. This device can be
used on the same extensions and in
the same manner as the Iwan.

The ship auger is most effective in
clays or cohesive materials and is
available in 2, 2 1/2, and 3 1/2-inch sizes.
When the earth to be sampled is not
self-supporting, it can be dug with
an Iwan until it starts to cave; then,
with casing in place, the sampling
can be continued with a ship auger
of the next smaller size or with a
closed-spiral or Jamaica open-spiral
auger, Figure 4. These are variations
developed for use where satisfactory
results are not obtainable with a ship
auger. The closed or open-spiral de-
sign of these augers retains the sam-
ple in soils where the ship auger
would give poor recovery. Both the
open and closed-spiral augers are
available in outside diameters of 2,
2 1/2, and 3 1/2 inches.

Since subsurface conditions vary

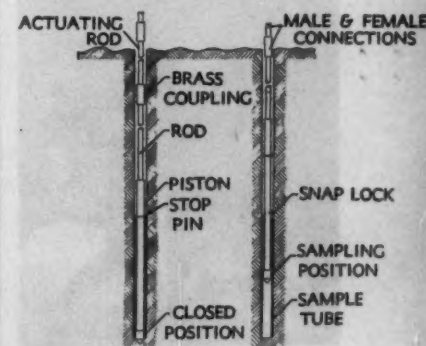


Figure 6. Operation of Davis peat
sampler.



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JANUARY, 1959

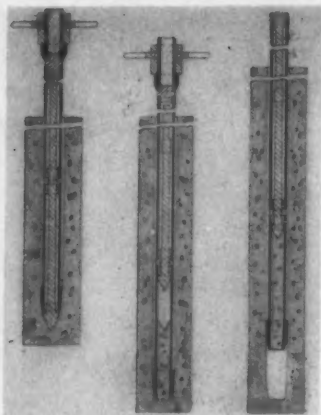


Figure 7. Operation of 1-inch plug sampler.

strata under test. The sample kit also includes a tempered steel head for driving, wrenches for making up joints, and a dozen sample jars for sample storage.

Peat sampler

A handy but limited tool for exploring peat deposits and undisturbed sampling of soft soils is the Davis peat sampler, Figure 6. The sampler is pushed by hand into a bog, swamp, or soft silt formation. During its downward course, the sample tube is in a retracted position and is closed by a piston fixed to the end of the push rods. When a sample is desired, the operator gives a sharp upward jerk. Friction on the sampling tube holds it in place while the rod with the piston attached retracts, opening

the cylinder. A snap-spring catch locks the piston in an upward position.

The sample recovered is $\frac{3}{4}$ inch in diameter by $5\frac{1}{2}$ inches long and can be definitely identified as to the recovery elevation without the danger of the sample being contaminated by overlying material. Although the peat sampler can be used only in places and to depths where it can be pressed by hand, its advantages for swamp and marsh work are readily apparent when it is realized that a complete set of tools for 35-foot depths weighs only 25 pounds. It is usable anywhere a man can go. Variations in the resistance necessary for penetration provides additional valuable information on the relative compaction of the formation being investigated.

Plug sampler

Similar to the peat sampler, but with broader application, is the 1-inch retractable plug sampler. This heavy-duty, hand-operated sampler requires a crew of two or more and will obtain samples to depths of 10 feet.

The sampler is equipped with a tool steel point and seamless steel tube casing for driving through relatively hard formations. In operation, Figure 7, the sampler chamber is closed until the predetermined sampling elevation has been reached. The plug that closes the sampler is manually retracted by a string of actuating rods passing through the interior of the casing. With the sample tube open, the tool is driven downward, pushing the sample into a brass liner

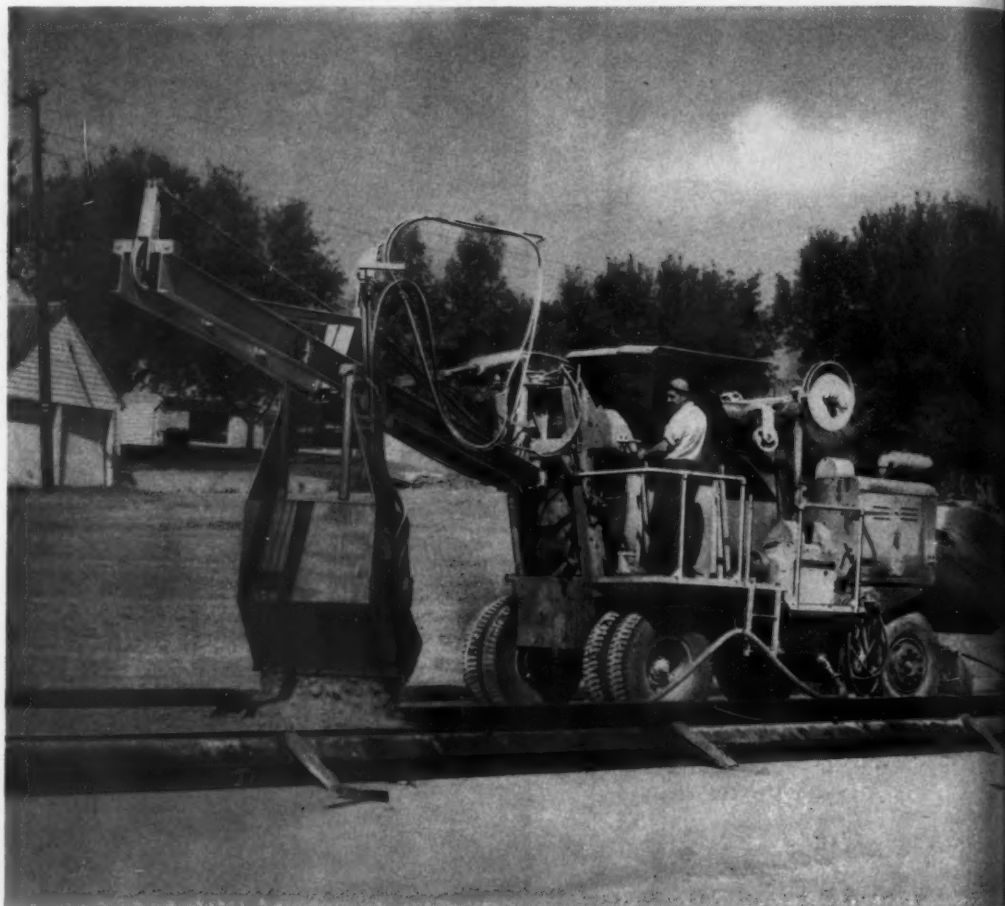
(Continued from preceding page)

from area to area, no one sampling tool can be recommended for all conditions to the exclusion of others. Successful recovery requires the specific use of certain tools, and the sampler that worked in one place will be unsuccessful somewhere else.

Sampling kit

It is possible, however, to select a basic set of tools that will meet most conditions. A soil-sampling kit of twelve selected sampling tools, Figure 5, will recover accurate samples from practically any material except rock and within the limits of hand operation. The kit contains sufficient drill-rod extensions to sample to depths of 25 feet. The Iwan auger in the set is 3 inches in diameter, while the other tools are 2 inches in diameter for easy following, even in casing. Soil-sampling kits provide the soils investigator with a basic lever to pry information out of the ground, despite varying conditions. Some kits, in addition to having Iwan, ship, and open and closed-type augers, contain a steel probe, a chisel bit for rudimentary wash borings, and a split tube and thin-wall tube sampler for more advanced sampling. The latter two units are used where a higher-grade sample must be recovered for permanent preservation or laboratory analysis.

Split tube and thin-wall samplers are inserted into holes previously made by an auger or chisel bit. They are then driven or pressed into the



Big 34-E twinbatch team working side-by-side widened runways on this military airbase, completed job "on the double". Notice how one long-boom paver reached the outside half, while the other 34-E poured the inside half of the strip. For dependable, high-production output on your major road and airport paving contracts, better look into the Big Koehring 34-E.

"Timely" precision-finishing is important on any paving job. Operating at almost twice the speed of a 34-E paver, Koehring Longitudinal Finisher handles all practical consistencies of concrete — wet or dry. It overcomes slump difficulties on curved grades — produces smooth, mechanical accurate slab surface, with uniform crown transition.



Figure 8. Vane attachment for 1-inch plug sampler.

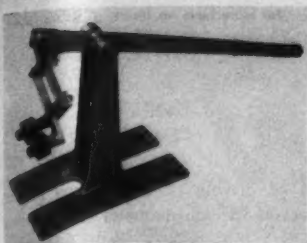


Figure 9. Rod pulling jack.

within the sample chamber. The sample recovered by the plug sampler is not an undisturbed sample, but it is a better grade of sample than normally required for a preliminary survey. As such, it is suitable for classification, identification, and analysis as

to moisture content, grain size, etc. The plug sampler, because of its design and the fact that it is driven, will double as a probe. When the number of blows expended in driving it a given distance are recorded, the tool will provide valuable additional information for the soils engineer or designer.

Vane shear attachment

Because of its relatively light weight and ability to obtain accurate samples, the 1-inch plug sampler has become increasingly popular with practicing soils engineers for many purposes other than general-survey work. The vane attachment shown in Figure 8, for example, will add much to the usefulness and versatility of the tool. Good in-place shear read-

ings to depths of 50 feet are obtainable by slowly turning the actuating rods with a torque wrench. The attachment includes antifriction bushings at the top and bottom of the actuating rods to minimize frictional error.

The rod puller, Figure 9, is not a sampling tool, but a very helpful accessory when hand probing or augering have to be done. The powerful jaws of the jack operate much the same as ice tongs. The harder the pull, the tighter the tool's steel jaws grip the rod. The rod puller accommodates the 1-inch retractable plug sampler. Accessory jaws will accommodate E, A, or B drill rods.

(Next month's installment will deal with "Probing, Boring, and Exploration for General Surveys.")

16-E twinbatch® OFFERS a time-saving idea FOR YOUR PAVING JOBS

On most street and highway paving, there's extra concrete to be poured in addition to the main slab — such as: center-strips, scattered intersections, curbs, gutters, culverts, approaches to driveways, bridges and side-roads. These jobs require the time-saving mobility of a rubber-tired paver — and here's an answer to the problem.

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With a Koehring 16-E *twinbatch* in your paving spread, you can get back on new slab in as little as 7 days to do clean-up work, pour adjoining slabs, or widen highway and airport strips. It works on or off-pavement, drives from one work-section to the next under its own power. Where frequent moves are involved, this saves waiting for trailer, loading and unloading delays.

For all its time-saving mobility, the Koehring 16-E *twinbatch* is primarily a production paver. On main slab work, it hits a top output of 86.7 batches

an hour (based on 60-second mixing cycle). This reserve production capacity with Koehring *twinbatch* Autocycle mixing lets you pick up any lost time resulting from bad weather and other normal job delays.

Averages 50 yds. an hour

As a result, Koehring 16-E *twinbatch* easily maintains an average of over 76 batches an hour — 8 hours a day. Based on 16 cu. ft. per batch, plus the usual 10% overload, this assures you 50 cu. yds. of concrete per hour on straight-production paving — with a small crew.

While its usefulness is unlimited as a general-purpose paver, the Koehring 16-E *twinbatch* also serves as a mobile concrete mix plant. It discharges into overhead hoppers, forms, chutes, loads trucks. Boom elevates 60° — gives controlled discharge at 21-foot height (higher with special boom). Do you want to learn more about it? Your local Koehring distributor is the man to see. Better call on him right away.

High-mobility cargo truck operates in tough terrain

A high-mobility cargo truck has been built to specifications of the Operations Division of the Detroit District, U. S. Army Corps of Engineers. Able to negotiate in mud, sand, snow, and marshy areas, the vehicle will be used to conduct subsoil exploration, plate bearing tests, flood-control work, and SAC Air Force construction projects in Michigan.

Among the many features of the truck are: all-wheel drive; low-speed gear ratios; power steering and brakes; a torque proportioning device for added traction on slippery surfaces, mud, and sand terrains. It also has 18.00 x 26 tires; a 22-inch ground clearance beneath the axle; a front-wheel position indicator in the cab that tells the operator the exact position of the front wheels; and a tire inflation schedule on the vehicle dashboard that enables the driver to manually reduce or increase all tires to identical inflation pressures commensurate with payload, terrain, and speed.

Weighing 17,900 pounds, the truck has a payload capacity of 6,000 pounds. It measures 262 1/4 inches long, 96 inches wide, and 105 3/16 inches high. Maximum speed is 42 mph, and gradability is 60 per cent plus.

Aerial photography aids design of expressway

Aerial photography will be used extensively to assist in design work on an 11-mile section of the proposed 23-mile Western Expressway that will give Rochester, N. Y., a faster western connection with the New York Thruway. The design contract was awarded to Lockwood, Kessler & Bartlett, Inc., Syosset, N. Y.

The toll-free expressway, being built at an estimated cost of \$11 million, will relieve traffic on State Routes 33 and 33A, which it will roughly parallel. The new road will cut driving time between Rochester and the LeRoy interchange of the Thruway in half, saving motorists up to 25 minutes on the trip between Rochester and Buffalo.

A limited-access highway in keeping with standards of the Interstate System, the expressway will have two 2-lane roads, one for each direction of traffic. A mall dividing the opposing roads will vary in width from 60 to 600 feet.

The expressway section will bridge 10 existing roads and will have circular ramp interchanges in the vicinity of Gustin Road providing a connection to Route 19, and in the vicinity of Route 33A to connect with Route 33. Slip rams will be built in the vicinity of Route 36 and at Union Street. The job also involves enlarging the LeRoy interchange of the Thruway.

Some 167 motorists paid Garden State Parkway (N. J.) tolls the hard way last year. Caught trying to evade the 25-cent toll, the 167 paid fines and costs from \$3 to \$30.

New Koehring Transverse Finisher — One-man operated, this fast-working unit provides efficient low-cost finishing — produces a slab surface 10 to 30 feet wide that meets the most rigid highway and airport specifications. A single lever control assures uniform crown transitions. 2 adjustable oscillating screeds on new Transverse Finisher handle all types of concrete.

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Boring rig simplifies pile-driving job

A fast-moving job is done on driving piles for retaining walls along the Schuylkill Expressway near Philadelphia. A Marion crane handles 65-foot leads as the Hugh Williams boring equipment drills rock beneath the 14-inch casing pile. The Lorain truck crane backfills around completed piles.



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The driving of over 20,000 linear feet of 14-inch-diameter casing piles 2 feet into rock consisting of mica and quartz was made easy through the use of a fast crane-mounted earth-boring rig.

This operation, a part of the \$7,915,000 Schuylkill Expressway contract awarded to Lipsett, Inc., New York, N. Y., was done on a 3.7-mile stretch along the west bank of the Schuylkill River in Philadelphia, Pa.

Drilling assists driving

The contractor employed Williams boring equipment, riding in special 65-foot-long leads supported by a Marion crane, to drill a 12-inch-diameter hole into rock. This was done so that the 14-inch casing pile could be driven at least 2 feet into rock. Lipsett began operations by driving the steel casing pile with a McKiernan-Terry 11-B-3 air hammer, powered by a bank of Ingersoll-Rand 600-cfm air compressors, until the rock stratum was reached. The hammer was then replaced by the leads supporting the boring equipment.

A 12-inch-diameter and 3-cone Williams rock bit, mounted on a 3-inch-diameter hollow steel shaft, was then lowered inside the casing to sink a 2-foot hole into rock. The bank of compressors supplied air to the Ingersoll-Rand air motor, riding inside the leads, which turned the drill shaft. Air was also forced down the hollow shaft to blow out the debris inside the casing. After the hole was drilled, the casing was redriven into rock by the hammer.

The drill bits had to be replaced after drilling about 100 linear feet for some 50 piles. The piles were then cut off at the desired elevation, leaving 12 inches to be encased in the concrete footing and filled with concrete. During drilling, the base of the leads was clamped to the protruding portion of the pile for added stability.

This type of piling was required on the job to support the two retaining walls—1,900 and 1,500 feet long—built to separate the new expressway fill and the relocated West River Drive along the river. The expressway grade is about 15 to 20 feet above that of the West River Drive and requires retaining walls 20 to 27 feet in height.

The piles had to be driven into rock, with the outside row on a batter toward the river, to prevent any possible movement that might be caused by the weight of the retaining wall and expressway fill. If this was not done, the added expressway fill, exerting a downward pressure against the retaining wall, might have caused the piles to move toward the river.

Footings poured

The retaining-wall footings, measuring 14 feet wide and 3½ to 4 feet thick, encase the top 12 inches of the casing piles. Expansion joints are built into the footings and wall on 10-

CONTRACTORS AND ENGINEERS

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FIELD TESTS PROVE GREATER

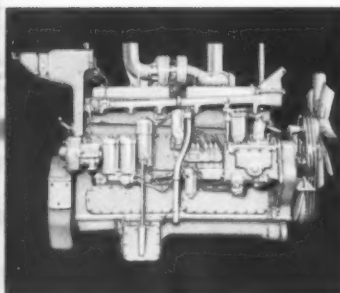
The new Caterpillar D8 Series H Tractor is ready *now* to increase its lead as undisputed king in its size class. A major achievement of Caterpillar's all-out research program, "Project Paydirt," the new D8 has been proved through a rigorous field testing program.

The D8 Series H is new in design, appearance and performance. It is bigger, more powerful. It incor-

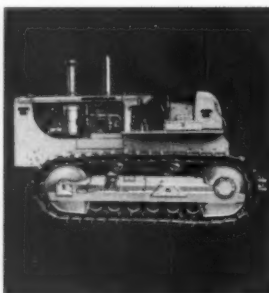
porates dramatic new engineering advances. It is easier to operate. It is faster.

On these pages you can see some of the *big* advances the D8 has made. But there are hundreds of other major improvements, too. For example, the transmission, bevel gear and steering clutches have *one* lube system, and it uses SAE 30 engine oil instead of special

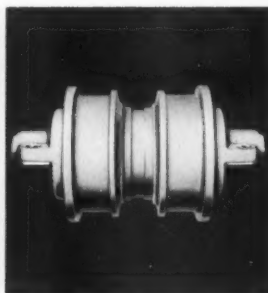
oils for class to with con new, hi Nos. 14: pressive. D8 is th



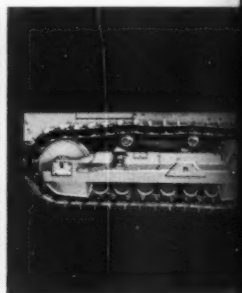
Horsepower increased 18%. The horsepower of the new D8 is up from 191 to 225 at the flywheel, from 155 to 180 at the drawbar. In addition, engine torque rise now is 20%, an increase of one-third. Over-all engine performance has been greatly improved by the addition of a turbocharger.



Size increased. To make effective use of the new horsepower, overall weight of the tractor has been increased 4,400 lb. to a total of 47,000 lb. At the same time the gauge has been increased to 84 inches, track on ground lengthened to 114 inches, square inches of contact increased to 5,505.



Lifetime lubricated rollers and idlers. That's right — lifetime! In a major research breakthrough, Caterpillar has achieved track and carrier rollers and idlers that never require further lubrication until rebuilding. And service life is hundreds of hours longer than with ordinary rollers.



New, stronger, heavier undercarriage. Every component, such as frames, links, braces, pins, bushings, shoes, has been made stronger by the use of improved materials and heat treat processes to provide longer life. And ground clearance has been increased 50% to almost 20 inches, greatest in the D8 class.

Dry-type air another major development new dry-type moves 99.8% air, even under conditions. be serviced good deal le

PUSHLOADING: PRODUCTION UP



INCREASED PRODUCTION WITH NEW D8

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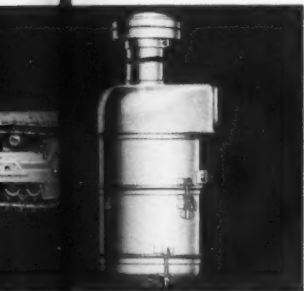
oils for each. In fact, the D8 is the only tractor in its class to have its entire power train pressure lubricated with completely filtered oil. And there are three brand-new, high-output hydraulic controls for the D8—Nos. 143, 165, 176. The list of improvements is impressive. Add them up, and you can see why the new D8 is the most advanced tractor in its size class.

Now—what can the D8 do for you? Here's the answer:

The Series H (available in direct or torque converter drive, according to your requirements) has been thoroughly field tested. A number of the big new tractors have been at work constantly in every kind of material on every kind of job. The statistics developed during these extensive tests prove conclusively that both bulldozing and pushloading production figures are up.

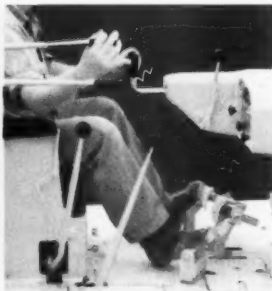
This means that you can move dirt faster and easier than ever before with a tractor in this size class. You get higher production, bigger profit—yet the big new D8 Series H has actually proved *more economical* to own and operate!

But find out for yourself. Get the full story from your Caterpillar Dealer, all the eye-opening facts and figures that can only be touched on briefly here. Then see this great new machine at work on your operation as soon as possible! You can't afford not to.



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pins, bush-
made stronger
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% to almost
the D8 class

Dry-type air cleaner. Here's still another major Caterpillar research development on the new D8—the new dry-type cleaner which removes 99.8% of dirt in the intake air, even under severe operating conditions. The new cleaner can be serviced in 5 minutes, costs a good deal less to use.



Superior operation. Operator visibility is excellent because of higher deck and changed seat position. Console-type controls make operator's job easier. And on torque converter models, standard foot-operated decelerator can override hand throttle—free operator's hands for other controls.

TWO MORE IMPORTANT OPERATOR CONVENIENCES

Higher speed. Completely new, long-life, direct drive transmission provides six speeds forward and six reverse. High speed has been increased to 6.3 MPH forward, 6.4 reverse to reduce cycle time. Operator can shift from any forward gear into a similar reverse gear

(or vice versa) by simply moving the forward-reverse lever.

Dependable oil clutch. By contractor and operator demands, the virtually service-free, easy-to-operate oil clutch has been retained in the new D8. Another important Caterpillar exclusive.



Multi-million-dollar research program pays off for you in every piece of Caterpillar equipment

The completely new D8 Series H you have just seen is dramatic proof of the power of Project Paydirt to give you the most modern, productive earthmoving equipment in the world. But this new tractor is just part of a continuing story.

Vast research and development facilities, the most extensive in the industry, bring improvement upon improvement to every piece of Caterpillar equipment. LOWBOWL Scrapers have revolutionized scraper design; the exclusive oil clutch has set new standards of long life.

Whether it's a better way to heat treat a bolt head, the Torsionflex Seat for operator comfort, or redesigning a tractor-scraper combination—nothing has been overlooked to increase the efficiency of Caterpillar machines.

Full Line Helps You Increase Production—Here's the line-up that's waiting at your Caterpillar Dealer to help you to more productive earthmoving.

Track-type Tractors—Besides the new D8, there's a full line of other Cat track-type Tractors ranging from the massive D9 (320 HP) to the smallest—the 63 HP D4. A full range of 'dozers (including the amazing Gyrodozer for D7 Tractors), scrapers and rippers expands the working applications of these tractors.

Traxcavators—The three Cat-built Traxcavators can fill your needs for a front-end loader because they're designed from the ground up for that purpose. Bucket capacities range up to 2¼ cu. yd. All Traxcavators can be equipped with

the exclusive Side Dump Bucket, or other special buckets, teeth, 'dozers or forks.

Wheel-type Tractors—Caterpillar wheel-type Tractors feature speed, power, four or two wheel options, plus the exclusive, matching LOWBOWL Scrapers. These rubber tire combinations have an unequalled record for profitable earthmoving production.

Motor Graders—The No. 12 and No. 112 Motor Graders both available with Preco Automatic Blade Control maintain blade accuracy of 1/8" in 10', have the versatility to solve construction and maintenance grading problems quickly, efficiently and easily.

Your Caterpillar Dealer is ready now to supply the fine equipment for earthmoving. He backs what he sells with dependable parts and service. See him today.

Caterpillar Tractor Co., Peoria, Ill.; San Francisco, Cal., U.S.A.

CATERPILLAR

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DIESEL ENGINES • TRACTORS • MOTOR GRADERS

EARTHMOVING EQUIPMENT

**BORN OF RESEARCH
PROVED IN THE FIELD**

V
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XUM

The base of the Hugh Williams drill leads are clamped around the top of the driven 14-inch casing pile during drilling operations. After the hole is sunk 2 feet into rock, the casing is re-driven and filled with concrete.



foot centers, and both sides of the joint are faced with dressed limestone masonry. The outside, or river side of the retaining walls, is faced with stone rubble 8 to 10 inches thick. The cast-in-place reinforced-concrete wall, backing up the masonry, varies from 2½ feet at the base to about 1½ feet at the top.

Whenever possible, the contractor drove 12BP53 steel piles to a 60-ton bearing with McKiernan-Terry 11-B-3 or 9-B-3 hammers to support the other retaining walls on the project. If a minimum 10-foot penetration was impossible, the contractor constructed 4x15-foot concrete pedestals, 1 foot into rock, spaced on 10½-foot centers. The thicknesses of the pedestals varied from 5 to 12 feet. Including smaller retaining walls supporting the ramps and steep slopes, Lipsett had over a mile of these structures to build.

Many bridges

Also included in this contract were 14 bridge structures. Four of them are on rock foundations, while the rest are supported on 120,000 linear feet of 12BP53 H-piles. These were driven to depths up to 65 feet by the air hammers handled by the Marion crane. Piles were driven to a minimum 60-ton bearing.

A rigid-frame concrete overpass, having a 50-foot span, was formed by casting the arched span in one continuous pour. Here, the contractor used full 4x8-foot plywood forms, supported by 12x12-inch timber shores, to pour half the width of the bridge. Each row of shores rested on a 12x12-inch timber, which was placed on another 12x12-inch timber on the ground. The adjacent surfaces of these timbers were greased. After the initial half-width pour was completed, the wooden wedges driven between the bottom 12x12-inch timbers were removed and the forms lowered. The entire formwork was then pulled out from beneath the pour, crews easily sliding the falsework on the greased 12x12-inch timbers. By having another greased timber for each row of shores, the contractor moved the entire form to the adjacent half-width pour to complete the bridge. All of the structure pours were placed by a Lorain Moto-Crane, which used a 1-yard bucket to handle the ready-mix concrete.

When completed this fall, there will be two 36-foot reinforced-concrete roadways, having 10-inch slabs, for the expressway portion of the contract. A 4-foot-wide concrete reflector curb will separate the roadways. The relocated stretch of the West River Drive, running along the river side of the retaining walls, will consist of a 36-foot asphaltic-concrete roadway.

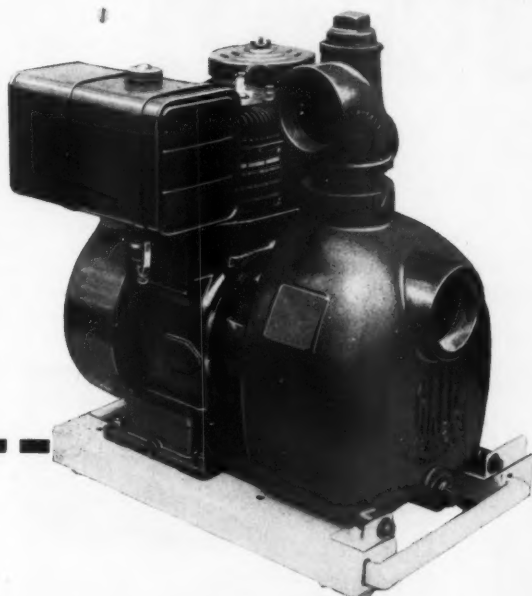
Lipsett, Inc., sublet the 726,000 cubic yards of earth excavation and the 100,000 yards of rock removal to

Glasgow, Inc., Glenside, Pa., in order to concentrate all forces on the structures work.

Personnel

Jack Kubera was superintendent on the job for Lipsett. Edward I. Farnan is the resident engineer for the Pennsylvania Department of Highways, and Stephen Ostimchuk is the assistant construction engineer for District 6, which is responsible for the entire \$44,550,000 Schuylkill Expressway project. THE END

NEW LIGHTWEIGHT ~~HALE~~ 30-T PUMPS 22,000 G. P. H.

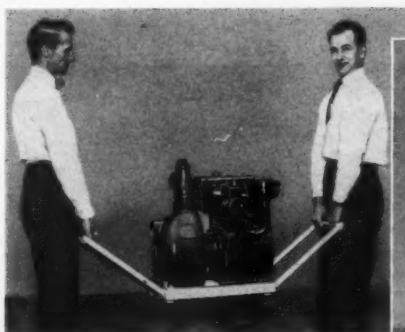


Here's a husky, heavy-duty, self-priming pump that's easily carried by two men—weighs only 143 lbs. Use it to pump out excavations, elevator shafts, manholes, or wherever you need to move a large volume of water at low cost.

The HALE 30-T has a "clogless-type," large-passage impeller that will not "seize" on its rust-resistant wear plate. The adjustment for impeller wear is external, so you won't have to dismantle the pump on the job.

A simplified, Sure-prime system eliminates the need for fussy priming gadgets, check valves, and suction hose foot valves. Sealing by "O" ring construction ends your gasket problems.

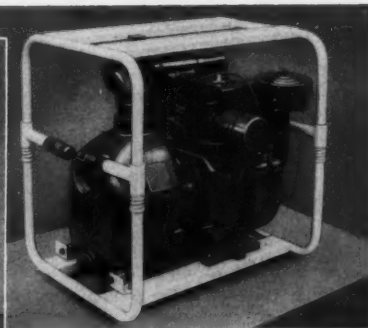
The 30-T is powered by an easy-starting, 9 h.p. Briggs and Stratton 4-cycle engine, equipped with exhaust valve rotator for long, service-free life. Also available—"Torrent," Model 20-T; pumps 7000 U.S. gallons per hr. Write to Hale for literature.



WITH EXTENSION HANDLES



ON WHEELS



IN PROTECTIVE, WRAP-AROUND FRAME WITH FOLDING HANDLES

HALE FIRE PUMP COMPANY • Conshohocken, Pa.

A LEADING NAME IN PUMPS FOR MORE THAN 40 YEARS

For more facts, use Request Card at page 18 and circle No. 235



February 9-13 American Society of Civil Engineers

Convention, Hotel Statler, Los Angeles, Calif. Don P. Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York 18, N. Y.

February 16-19 National Ready Mixed Concrete Association and National Sand and Gravel Association

Twenty-ninth Annual Convention of the NRMCA, and the Forty-third Annual

Convention of the NSGA, Roosevelt Hotel, New Orleans, La. Vincent P. Ahearn, executive secretary, NRMCA-NSGA, 527 Munsey Bldg., Washington 4, D. C.

February 17-18 Kentucky Highway Conference

Conference, University of Kentucky, Lexington, Ky. D. K. Blythe, head, Civil Engineering Department, College of Engineering, KHC, University of Kentucky, Lexington, Ky.

February 17-19 Short Course for Supervisors of Earthwork Construction

Short Course, Ohio State University, Columbus, Ohio. Prof. Emmett H. Karrer, Department of Civil Engineering, SCSEC, Ohio State University, Columbus 10, Ohio.

February 23-26 American Concrete Institute

Fifty-fifth Annual Convention, Statler-Hilton Hotel, Los Angeles, Calif. William A. Maples, secretary-treasurer, ACI, P.O. Box 4754, Redford Station, Detroit 19, Mich.

February 24-26 Short Course for Supervisors of Bridge Construction

Short Course, Ohio State University, Columbus, Ohio. Prof. Emmett H. Karrer, Department of Civil Engineering, SCSEC, Ohio State University, Columbus 10, Ohio.

February 24-26 Illinois Annual Conference on Highway Engineering

Forty-fifth Annual Conference, Illini Union Bldg., University of Illinois, Ur-

bana, Ill. John W. Hutchinson, assistant conference director, IACHE, 304 Civil Engineering Hall, University of Illinois, Urbana, Ill.

February 26-27 Illinois Traffic Engineering Conference

Annual Conference, Illini Union Bldg., University of Illinois, Urbana, Ill. John W. Hutchinson, assistant conference director, ITEC, 304 Civil Engineering Hall, University of Illinois, Urbana, Ill.

February 26-27 Mississippi Highway Conference

Conference, Continuation Center, University of Mississippi, University, Miss. W. N. Jones, Jr., acting director, MHC, Department of Conferences and Institutes, University Extension, University of Mississippi, University, Miss.

March 3-4 Utah Highway Engineering Conference

Twentieth Annual Conference, Union Bldg., University of Utah, Salt Lake City, Utah. Preston D. Linford, conference chairman UHEC, Civil Engineering Department, University of Utah, Salt Lake City 12, Utah.

March 5-6 Highway Engineering Conference of the University of Colorado

Conference, University of Colorado, Boulder, Colo. Roderick L. Downing, director, HECUC, 207 Engineering Bldg. No. 1, University of Colorado, Boulder, Colo.

March 8-14 American Congress on Surveying and Mapping and American Society of Photogrammetry

Annual Meeting, Shoreham Hotel, Washington, D. C. C. E. Palmer, secretary-treasurer, ACSM-ASP, 1515 Massachusetts Ave. N. W., Washington 5, D. C.

March 9-10 Georgia Highway Conference

Conference, Architecture Auditorium, Georgia Institute of Technology, Atlanta, Ga. Director, Short Courses and Conferences, GHC, Georgia Institute of Technology, Atlanta 13, Ga.

March 10-20 Civil Engineering Conference

Conference, University of Florida, Gainesville, Fla. F. W. Gilcreas, CEC, Department of Civil Engineering, University of Florida, Gainesville, Fla.

March 11-14 American Concrete Pipe Association

Meeting, Palm Beach Biltmore, Palm Beach, Fla. Howard F. Peckworth, managing director, ACPA, 228 N. La Salle St., Chicago 1, Ill.

March 17-19 National Association of Corrosion Engineers

Fifteenth Annual Conference and Corrosion Show, Sherman Hotel, Chicago, Ill. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

March 17-21 New York State Association of Highway Engineers

State Convention, Hotel McAlpin, New York City. George J. Marks, convention chairman, NYSAHE, State Office Bldg., Babylon, Long Island, N. Y.

March 18-20 Association of Highway Officials of North Atlantic States

Annual Convention, Traymore Hotel, Atlantic City, N. J. Kenneth D. Rice, executive secretary, AHONAS, 1035 Parkway Ave., Trenton, N. J.

March 18-20 Short Course for Superintendents and Operators of Water and Sewerage Systems

Twenty-second Annual Course, Louisiana State University, Baton Rouge, La. Fred H. Fenn, dean, College of Engineering, SCOSWSS, Louisiana State University, Baton Rouge 3, La.

March 30-April 2 Purdue Road School

Forty-fifth Meeting, Memorial Union Bldg., Purdue University, West Lafayette, Ind. Dr. J. F. McLaughlin, assistant professor of civil engineering, PRS, Civil Engineering Bldg., Purdue University, Lafayette, Ind.

April 1-3 South Dakota Highway Short Course

Course, Union Bldg., South Dakota State College, Brookings, S. Dak. Emory E. Johnson, SDHSC, South Dakota State College, Brookings, S. Dak.

April 6-10 American Welding Society

Fortieth Annual Convention, Hotel Sherman, Welding Show, International Amphitheatre, Chicago, Ill. AWS, 33 W. 39th St., New York 18, N. Y.

CONTRACTORS AND ENGINEERS



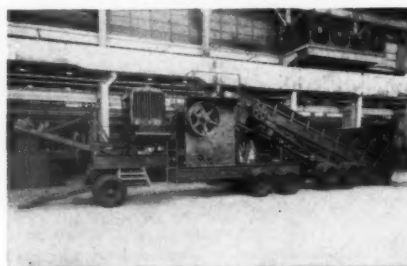
Stationary Lima Austin-Western Crushing and Screening Plant produces high tonnage of accurately sized specification material. Five 20-yd., 2-compartment bins facilitate truck loading.

Lima Austin-Westerns crush, screen...boost output, reduce material costs!

Lima Austin-Western, engineered and quality built to meet your exact needs for accurately sized specification material at low cost. A complete line of portable and stationary crushing and screening plants, setting new high standards for high level production and low maintenance in pit or quarry service.

Line includes jaw and roll crushers in many sizes, matching screens, elevators, conveyors and bins. Apron or reciprocating feeders control material flow, eliminate overloading, choking and surging. Centralized power plants, anti-friction bearings and fewer shafts, belts and gears keep operating costs low.

Get full information now on high output, low cost Lima Austin-Western Crushing and Screening Plants. See your nearest distributor or write us.



Apron type portable feeder shown with a 2540 primary portable plant.



101-SE crushing and screening plant—typical of portable units designed for fast moves and easy setups to reduce haul costs.

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LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO



For more facts, use Request Card at page 18 and circle No. 236

April 7-9 Ohio Highway Engineering Conference
Conference, Ohio State University, Columbus, Ohio. Emmett H. Karrer, professor of highway engineering, OHEC, Brown Hall, Ohio State University, Columbus 10, Ohio.

April 13-17 Greater New York Safety Council
Twenty-ninth Annual Safety Convention and Exposition, Statler Hotel, New York, N. Y. Paul F. Stricker, executive vice president, GNYSC, 60 E. 42nd St., New York 17, N. Y.

April 16-17 American Institute of Steel Construction
Meeting, Boca Raton Club, Boca Raton, Fla. L. A. Post, executive vice president, AISC, 101 Park Ave., New York 12, N. Y.

April 21-24 High Speed Computer Conference
Conference, Pleasant Hall, Louisiana State University, Baton Rouge, La. B. B. Townsend, conference chairman, HSCC, Mathematics Department, Louisiana State University, Baton Rouge, La.

April 23-25 Texas Aggregate Association and Texas Ready Mixed Concrete Association
Fifth Joint Annual Conference, Shamrock Hilton Hotel, Houston, Texas. Ray L. Cain, executive secretary, TAA-TRMCA, 201 Perry Brooks Bldg., Austin, Texas.

Reinforced concrete topic of new book

"Reinforced Concrete Fundamentals", by Phil M. Ferguson, includes pertinent information on the physical behavior of reinforced-concrete members. Emphasis is on the new ultimate-strength concept and the manner in which beams and members fail under overload. Also included are details of ultimate-strength design for practical use, information on the American Concrete Institute Building Code requirements, and a comparison between ultimate-strength and working-stress analysis.

Special features of the book cover reinforced-concrete design as a developing and changing process; a discussion of slabs; the research basis for reinforced-concrete theory; working-stress methods in complete detail; and development or anchorage length, as well as moment, in a discussion of bend points for steel.

Priced at \$9.50, the book may be purchased from the publisher, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Film on slip-form paver for concrete highways

"Low Cost Concrete Highways With the Slip-Form Paver," a 16-mm sound and color film from the Portland Cement Association, includes the various methods of fine-grading operations, as well as mixer operations for shoulders and roadbeds where shoulder widths will not permit use of the mixer.

The 12-minute film depicts all of the paving operations with a slip-form paver from grading and placement to the curing and sawing of joints. The final sequence features a ride down a completed section of the interstate highway in Colorado, where roughometer tests show results to be comparable to those of paving by conventional methods.

The film is available on a free-loan basis through all PCA district offices or from its headquarters, 33 W. Grand Ave., Chicago 10, Ill.

FEBRUARY, 1959

HRB bulletin analyzes impact of highways

"Land Acquisition and Economic Impact Studies", Bulletin 189 from the Highway Research Board, contains a 1958 committee report and four papers dealing with the economic impact of highways, either newly constructed or reconstructed.

The first paper describes an industrial-development survey on Massachusetts Route 128. The economic and social effect of the Connecticut

Turnpike is discussed in the second paper. The third paper describes and analyzes the methods used to study effects of the Lexington, Va., bypass on business volumes and composition. The last paper discusses tenant relocation for public improvement, in connection with the proposed New York City approaches needed for opening the second deck of the George Washington Bridge.

Priced at \$2.40, the bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Haller Testing appoints

George H. Ayres has been appointed vice president of the Haller Testing Laboratories, Inc., New York City. Robert J. Bell has been named manager of the New York City office, and John R. Graves will be in charge of sales.

The firm's engineers, chemists, and inspectors serve as an independent and impartial third party to assure municipalities and owners of compliance with engineers' specifications.

"Our LIMA 1250 Crane is really a brute for punishment"

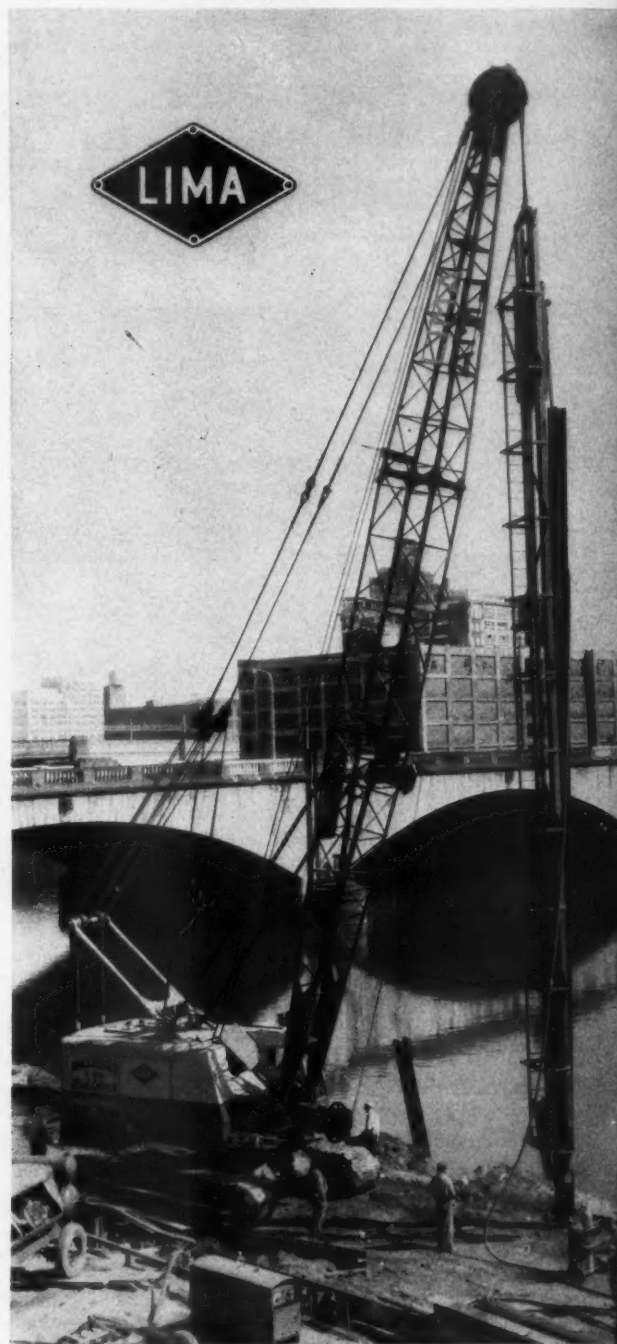
says McCloskey & Co.
Philadelphia, Pa.

A big Lima Type 1250 Crane owned by McCloskey & Co., noted Philadelphia contractor, was used on their \$5,000,000 job in the heart of the Quaker City. Part of this project involved demolishing the century-old Chestnut Street bridge and adjoining seawall. Besides pulling the old piling out of the bank of the Schuylkill, the Lima had the job of driving 1800 steel piles, 60 ft. long and weighing from 1½ to 2¼ tons each.

Job Superintendent Stanley Czapkewicz says: "Our Lima 1250 Crane is really a brute for punishment and has done an excellent job. I've had a lot of experience with Limas, and know them to be outstanding machines. The Type 1250 Crane more than lives up to expectations."

"Lima service means a lot too. When the crane was delivered, the factory service man helped us with the unloading, then made sure that our operator knew exactly how to handle it. He has since made several follow-through calls. We also know we can count on our local Lima distributor for parts and service any time we need them."

There's a rugged, high-output Lima for every construction need—cranes (to 110 tons), shovels (½ to 6 cu. yds.) and draglines (variable)—crawler, truck and wagon mountings. See your nearby Lima distributor. Or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.



Lima Type 1250 Crane driving piles on bridge building job, Schuylkill River, Philadelphia, Pa.

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LIMA Construction Equipment Division, Lima, Ohio
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Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

For more facts, use Request Card at page 18 and circle No. 237



Earth and structure work tackled simultaneously to rush expressway job

An Allis-Chalmers 300 scraper—part of the 14-scraper fleet handling grading for the Hartford-Springfield Expressway—picks up a load with help from an Allis-Chalmers HD-16.



One of six Lima Roadpackers on Illinois East-West Tollway Project pauses here for the photographer during vibratory compaction operations on access road.

Six LIMA Roadpackers deliver fast high-density compaction to speed Illinois Tollway job

"We tried all the vibratory type compactors before buying our first Lima Roadpacker in 1957. It proved without a doubt that high-density compaction need not be a slow process," says CKG Associates, Hinsdale, Ill.

Roadpackers meet accelerated schedule

"As our work on the Tollway progressed, we bought additional units to maintain our accelerated production schedule. Today we own six Lima Roadpackers. They speed back and forth to various sections of the job at 30 mph to compact vast quantities of base material as soon as it is spread.

"Reliable compaction, big production, and amazing mobility are the reasons we chose the Roadpacker as our standard compaction tool!"

The Lima Roadpacker is equipped with six shoes, each producing 2200 vertical vibrations per minute to compact from bottom up without shov-

ing action. Fills all voids for high-density consolidation. Entire vibration system completely sealed from dirt. Unit is designed for fast and easy maintenance.

Compaction width variable

Outside vibratory shoes fold back easily for road width clearance to travel without special permit. As necessary, 4, 5 or 6 shoes can be used to vary width of compaction. Roadpackers compact with equal precision forward or in reverse.

You save when you lay fewer courses . . . compact in fewer passes. Lima Roadpackers will produce required density of suitable material in courses up to 12 in. Two-shoe widener attachment available . . . no need for special trench roller.

Get all the facts about economical, high-speed vibratory compaction with the Lima Roadpacker. Write for bulletin or see your Lima distributor.

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Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment



For more facts, use Request Card at page 18 and circle No. 238

While the contractor worked on the river piers for a bridge, a subcontractor handled roadway and borrow excavation with a fast scraper fleet to finish another section of the Hartford-Springfield Expressway in Connecticut.

The 3½-mile section, running from State Route 75 at Windsor to about U. S. 5A near Windsor Locks, extends the 4-lane artery already completed between Hartford and Windsor.

Besides taking the earthwork contract, Savin Bros. Inc., Hartford, took on the job of building the substructure for a 5-span 503-foot-long welded-girder bridge over the Farmington River. This is the largest of the contract structures. Savin started operations on the river piers and sublet the earthmoving to A. E. Williams Construction Co., Inc., Hartford.

The sub started moving earth with a fleet of 11 fast scrapers that hauled 8,000 cubic yards per 10-hour workday as they worked the single borrow area and the roadway excavation. On this section, grading involved moving over 1,500,000 cubic yards of earth excavation and 775,000 yards of borrow.

Williams handled the grading between the Farmington River and U. S. 5A, and Savin completed the grading between the river and the finished expressway. In this short stretch, over 550,000 cubic yards of borrow was required to build up the grade. For this operation, Savin built a temporary bridge connecting the eastern shore of the Farmington River to the earth cofferdam along the western edge so that borrow could be hauled across the river.

The Bucyrus-Erie 71-B, which worked as a crane to handle the pier construction, plus another 71-B and A-51, were used as shovels to load a fleet of LeTourneau-Westinghouse Tournarockers and bottom-dump Euclids.

The earthmoving subcontractor used seven LeTourneau-Westinghouse Model C scrapers; two Allis-Chalmers 300 scrapers; two Heil scrapers; and three scrapers pulled by Allis-Chalmers tractors to handle the cuts and fills. Five Allis-Chalmers tractors were on the job to handle the push-loading of scrapers and the spreading of fills. The deepest cut was about 30 feet; the maximum fill, 42 feet. Williams kept the average haul distances on this rock-free project down to about ¼ mile and routed the scrapers over fill areas to obtain the required compaction. The short hauls and shallow 3-inch lifts did much to keep production high.

CONTRACTORS AND ENGINEERS

One of the seven LeTourneau-Westinghouse Model C's in the spread is pushed by another HD-16. Short hauls and the shallow 3-inch lifts did much to keep production high.



Substructure foundations

Savin started operations on the Farmington River bridge substructure by building an earth cofferdam out from the western shore of the river. This cofferdam enclosed an area for one of the two river piers and one of the land piers. A Bucyrus-Erie 71-B crane with 80-foot boom excavated the area with a clamshell bucket, and the excavated material was used to build the cofferdam fill up above the water line.

Unwatering of the cofferdam was accomplished by two Gorman-Rupp pumps—a 4-inch and a 10-inch. Since the small flow of the river made seepage slight, only the 4-inch gasoline-driven pump was required to keep the cofferdam unwatered. The 10-inch pump acted as a standby.

Savin drove eighty 12BP53 steel H-piles to an average depth of 80 feet with a Vulcan No. 1 hammer riding on 104-foot leads supported by the Bucyrus-Erie crane. The required bearing was easily obtained on the piles, which were spaced on 4-foot centers in rows, but additional driving was done to get an 85-foot penetration when possible. The hammer was powered by an Ingersoll-Rand 600-cfm Gyro-Flo air compressor.

After driving the piles, the contractor used cutting torches to cut them off so that they would protrude 1 foot into the reinforced-concrete footing. This footing for the river piers measures 115 feet long, 15½ feet wide, and 4½ feet thick.

The land piers called for 124 and 69 piles on 3-foot 9-inch centers and 5-foot 1-inch centers, respectively, capped with 4-foot-thick concrete footings.

After completing the footing for both of the western piers, Savin extended the earth cofferdam across the river and built another earth cofferdam for the two eastern piers. The temporary bridge used to haul borrow to the opposite shore was built along this second-stage cofferdam and connected with the earth dike of the first cofferdam. This made it possible to haul fill in to build up the short stretch between the existing expressway and the Farmington River bridge.

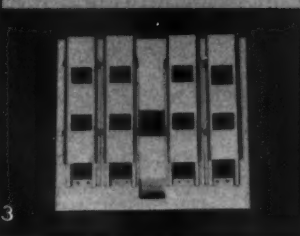
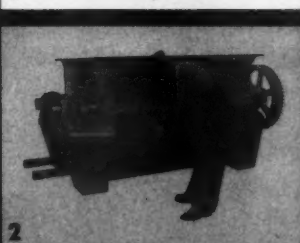
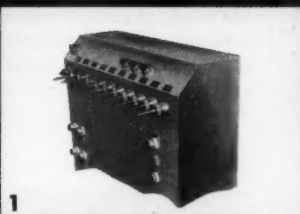
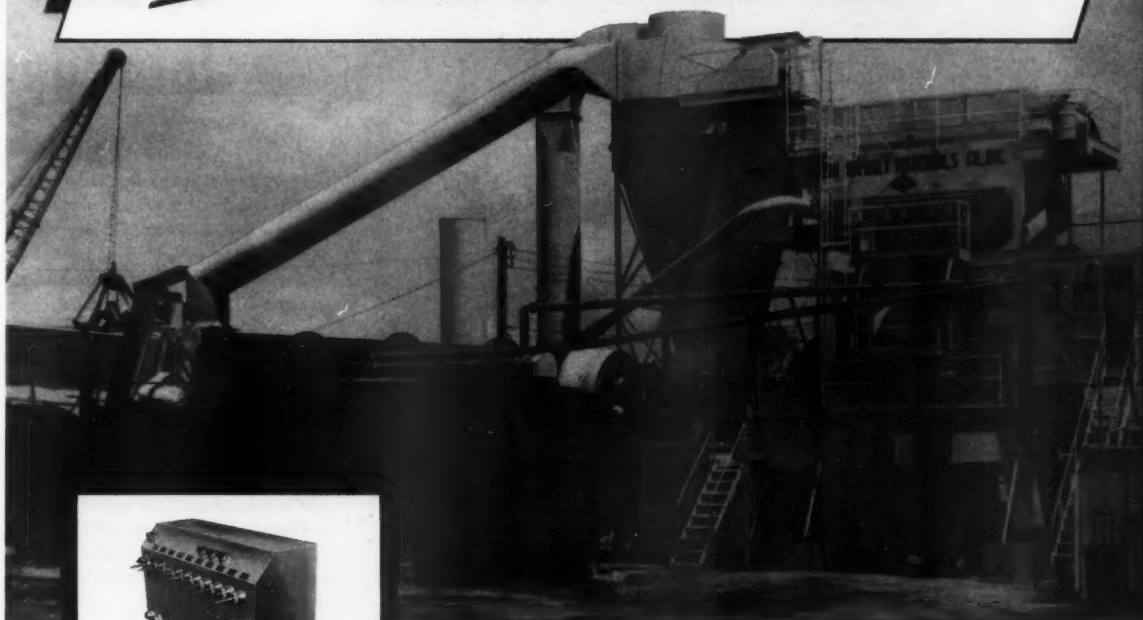
Personnel

Peter Savin was the project manager, Phil Sica the superintendent, and Charles Hazard the general office manager for Savin Bros. Harry Sampson was the superintendent for the earthmoving subcontractor, A. E. Williams. Warren Whiton is the project engineer on the expressway for the Connecticut State Highway Department.

THE END

UNION ASPHALT MATERIALS CO. Inc., Ostrander, Ohio

SELECTS THE BIG MADSEN MODEL 481 6000-lb. ASPHALT PLANT



...for FAST PRODUCTION
...for EASY, LOW-COST MAINTENANCE

What do you look for in an asphalt plant? Union Asphalt Materials Co., Inc., Ostrander, Ohio wanted the clean operation, oversize construction, maintenance economy, and the fast production and big tonnage output of the MADSEN Model 481. The MADSEN 6000-lb. plant shown above gives this successful contractor these MADSEN advantages...advantages that can pay-off in greater owner profits for years to come. Three of the outstanding MADSEN features which help provide these advantages are shown at the left.

- 1 Fast air-cylinder operation — through conveniently located control console. Levers electrically energize solenoid-operated air valves for faster control of bin gates, weigh-box, mixing, asphalt injection, asphalt charging and dumping to truck.
- 2 Oversize MADSEN Twin-Shaft Pug Mill Mixer — for the ultimate in fast, thorough mixing. Curved bottom and center liners are externally removed and installed... an easy 20-minute job per liner section for one man without getting on the inside of mixer.
- 3 Triple discharge bin gates — for livelier, more efficient bin action. Aggregates are withdrawn from each bin compartment through 3 openings. This MADSEN feature (patent pending) eliminates "coring out" and segregation — results in more uniform filling of the weigh-box.

For complete details on the MADSEN Model 481 Asphalt Plant—See your MADSEN Distributor or write MADSEN WORKS, P.O. Box 38, La Mirada, California or Baldwin-Lima-Hamilton Corporation, Lima, Ohio.



Equipment that Serves

COMPLETE PARTS STOCK AVAILABLE IN LOS ANGELES AND LIMA, OHIO

MADSEN WORKS

Construction Equipment Division
BALDWIN-LIMA-HAMILTON



ASPHALT PLANTS • PUG MILL MIXERS • AGGREGATE DRYERS • DUST COLLECTOR UNITS • ROAD PUG TRAVEL MIX PLANTS • WEIGH BATCHERS • DUST WASHERS • FEED BUNKERS • FEED TUNNELS • ASPHALT TANKS • ASPHALT AND FUEL PUMP UNITS • CONCRETE FLOAT FINISHING MACHINES FOR AIRPORTS AND HIGHWAYS • ROYAL CROWN PUMP VALVES

For more facts, use Request Card at page 18 and circle No. 239



The double-barreled lamella roof spanning the 94 x 90-foot gymnasium dominates the junior high school in Bloomfield Township, Mich. A 106-foot-long G-plate girder supports the arches at their common edge; H-columns support outer edges.



Bags of gypsum for the Pyrofill gypsum concrete are tossed directly from the Brockway truck to the mixing hopper on the pumping unit. Made by the United States Gypsum Co., the material is mixed with water and pumped to the roof.



One man handles the gypsum hose as two others work the wooden screed swiftly and carefully to place alternate strips of 7-foot-wide gypsum on the arches. The 2-inch depth is obtained by resting pipe screed bars on top of the longitudinal bulb tees.



Austin-Western's exclusive front-end power gives a pulling assist to rear tandems for more power at the blade.

Power in front—steer in rear . . . Austin-Western does more work, speeds Michigan paving job

"Our two Austin-Western Super 88 graders do more work than any two competitive graders," says Louis Toccalino of G. Toccalino & Sons, Livonia, Mich.

"It's the only machine on the market that can do both close work and open road work, rough and finish grading, ditching and sloping . . . everything, equally well. And it has plenty of balanced power and traction for rugged work on any surface.

No downtime or maintenance problems

"One of our machines is a year old; we've had the other for 2 years. We've really kept them busy, but we haven't had any downtime or maintenance problems.

"The A-W combination of power in front and steer in rear really speeds construction. You can do work with an A-W that you wouldn't even consider attempting with other graders."

Austin-Western's exclusive front-end power means that every pound of the machine is alive and working . . . no dead-weight front ends on an A-W. All-wheel steering lets you steer the rear to move straight ahead; compensates for powerful sidethrust of a fully loaded blade.

Operators do more work, more easily

Operators like A-Ws because of the positive-action hydraulic controls that let them do so much more work better without getting tired out.

Ask for the full story now on this versatile tandem grader that does so much more work. Learn exactly why contractors like Toccalino in Michigan say, "We wouldn't buy any other machine for grading!" Contact your nearby Austin-Western distributor or write direct.

Austin Western

BALDWIN • LIMA • HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 240



Lightweight arches of steel form gym roof

Modern methods of construction match the modern design of a junior high school in Bloomfield Township, Michigan.

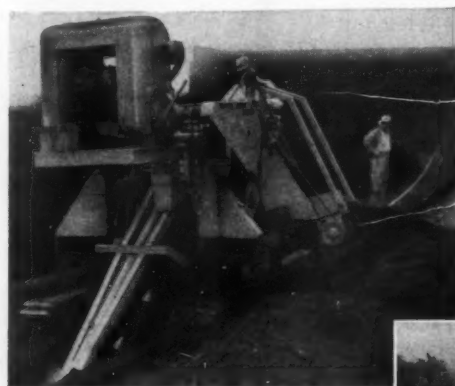
The most unusual feature of the construction is the double-barreled lamella roof that spans the 94x90-foot gymnasium. Built of a network of steel bar joists, the two lamellas are supported on their outer edges by steel columns and at their common inner edge by a steel-truss girder. The structural network carries a poured gypsum roof.

Unusual precast-concrete panels form a part of the nonsupporting exterior walls. Cast with a 1-inch

thickness of rigid insulation in their centers, the 3-inch panels have greatly improved insulation qualities and are lighter in weight than conventional types. The exposed marble-chip aggregate on the surface of the panels gives them an attractive appearance.

Floor-to-ceiling glass panels are used extensively in the curtain walls. Some 70 per cent of the exterior walls are of glass, while the remainder are of concrete panels and brick.

The Bloomfield Junior High School is located on a 16-acre site in Bloomfield Township, north of Detroit, Mich. Designed by architects Smith,



Which Size For YOU?

Rugged, Inexpensive VERMEER POW-R-DITCHERS

If one of your problems is low-cost, time-saving trenching and ditching . . . take a look at the VERMEER POW-R-DITCHER line before you buy! The 524T (above) digs 8" to 24" wide. The 4T (right) digs 6" to 14" wide. Both are fast, rugged, self-propelled and low in price. Ideal for digging foundation footings, gas, water, sewage and service lines. A third smaller unit also available.

**Write For Literature and Low
Prices On The Complete Line**

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1437 W. WASHINGTON PELLA, IOWA

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CONTRACTORS AND ENGINEERS



Concrete for the 4-inch-thick corridor floor is chuted from the Mack-mounted Smith mixer to a wheelbarrow. Visqueen plastic atop the gravel base keeps the ground from drawing moisture out of the concrete. Classrooms and courts are arranged checkerboard fashion so that classrooms will have walls of glass on three sides.

Scaffolds serve as templates as steel members are bolted; structural network carries a poured gypsum roof

Tarapata, MacMahon, Inc., Birmingham, Mich., the building has received many commendations for its advanced design. Construction of the 1-story steel-frame building was handled by Pulte-Strang, Inc., Ferndale, Mich., under a \$1,180,000 contract, which had Frank Williams as superintendent. The field superintendent for the architect on the project was William Hewitt.

This schoolhouse is so modern, so light and airy, that the children may not even realize they are in school. To prepare them for the complexities of this modern world, there are as many activity rooms as classrooms.

Band room, chorus room, shop, food lab, clothing lab, crafts room, and arts room are some of the eleven special rooms. Another eleven have been saved for such mundane subjects as reading, writing, and arithmetic. There's also a 3,500-square-foot auditorium, which may also be used as a cafeteria, and an 8,500-square-foot gymnasium.

To make the most use of natural light, the 72,000-square-foot building is laid out like the black squares on a checkerboard. Its numerous wings and courts enable most of the classrooms and courts to have window walls on three sides.

Double arch tricky to build
With its lightweight lamella design, the roof structure of the gymnasium called for special methods of construction. The two arches, which cover the 94x90-foot gym, are supported at their outer edges by eighteen 8x8-inch H-columns. At their common inner edge, the arches are supported by a 106-foot-long G-plate girder stiffened with trusswork to prevent buckling. The extra length of the beam allows for a 6-foot overhang at each end of the building.

The roof structure is built of a network of 12-inch-deep steel bar joists, crossing each other at about a 60-degree angle. The joists, which are about 6.5 feet apart, are further stiffened by longitudinal members. Welded to the top of the joists are

bulb tees, which receive the acoustical form board. The outward thrust of the arches is resisted by steel tie rods spanning the width of the building.

Erection of the roof structure, as well as fabrication, was handled by Lamella Roof Structures, St. Louis. The steel members arrived on the job in large enclosed trailer trucks. For convenience in shipping and erection, the bar joists came in about 7 and 14-foot lengths.

Men worked from two wooden scaffolds as they bolted together the individual pieces of the roof. The scaffolds also served as templates. One scaffold worked about a 12-foot section of one arch, while the second scaffold worked the opposing section of the other arch. This kept the



Muck and mire doesn't faze Austin-Western's powerful all-wheel drive hydraulic crane—shown here doubling in brass to tow heavy compressor-trailer on Niagara Power Project.

Austin-Western hydraulic crane... construction project workhorse

"We haven't got a single rig on the job that is more all-around useful and hardworking than the Austin-Western hydraulic crane." That's what Fred Sebastian, project manager for Gull and De Felice Construction Co., Niagara Falls, N.Y., says about the A-W crane.

"All-wheel steering gives it plenty of maneuverability to get in and out of the tightest places, yet it has enough speed to work fast in a large area. We work it double shifts and have never had any maintenance problems with it.

Handles, tows, totes and maintains
"It's a real workhorse on this job. We use it for everything... as a materials handling crane, to tow or tote, to maintain other equipment, and even as a back hoe.

"Our operators like it too. They seem to do a better job with equipment which they like and which

doesn't tire them out. It's easy to operate with precision because of instant response from the hydraulic controls."

The Austin-Western hydraulic crane is a versatile all-purpose 5-ton crane with 18-ft. telescoping boom. Full circle swing permits loading from front, rear or sides.

All-wheel drive and steering
All-wheel drive delivers plenty of power and traction for top performance under all surfaces and weather conditions. All-wheel steering permits an extremely short turning radius... maximum maneuverability. It is designed and built by Austin-Western to do more work with minimum maintenance.

Learn today why A-W crane owners are so enthusiastic about this versatile construction workhorse. Contact your nearby Austin-Western distributor or write us direct.

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with this new low cost

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POWER WELD

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Portable mountings available if desired

Take it to the job. This lightweight combination unit welds anywhere or furnishes power for running tools, lights, motors, etc. No delays—no electrical connections to make. Ready to go to work for you on a moment's notice, when and where you need welding and auxiliary power. Invaluable as emergency standby service should regular power fail. The Power/Weld furnishes 5 KW full time 110/220 AC power on a permanent basis. Be sure to see and try this new low cost two-in-one unit.

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Model GB-3186-S
Gas Drive with 6 or 12 KW AC auxiliary power

Model GPB-258-S
"Contractor's Special"

Model SP-418-W
Self-propelled U-Drive-It "Big Wheeler" gas drive welder

For more facts, use Request Card at page 18 and circle No. 242

Austin

100th YEAR

Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

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While the roof is being completed, ground in front of the building is leveled off by a John Deere tractor equipped with dozer. The front-end loader is used to clean up material around the building.

(Continued from preceding page)

weight of the two arches in balance.

After the roof structure was up, bulb tees were welded on 2-foot centers for the length of the arch. The bulb tees received the United States Gypsum 1-inch acoustical form board. When form boards were in place, the roof was covered with a light wire mesh and sprayed with a scratch coat of gypsum.

Pouring the roof

Since gypsum concrete sets up in less than eight minutes, pouring of

the 2-inch layer on the roof had to go fast. In the operation, the U.S.G. Pyrofill gypsum concrete was pumped through a flexible hose to the roof. One man on the roof handled the business end of the hose, while two men worked a wooden screed chain behind him. Loose pipes were used as screed bars.

Balance roof load

The roof was poured in alternating 7-foot-wide sections across the top of the lamellas. To balance the load on the roof, the inside half of one arch section was poured first, then the inside half of the opposing arch was poured. The outer halves were poured next.

Although this method proved successful, it is not the one recommended by Lamella Roof Structures. For a more even distribution of weight, they recommend that two gypsum hoses be used so that gypsum can be placed along the length of the arch.

The gypsum was protected by a Johns-Manville 4-ply built-up roof topped with marble chips. A plastic thermal spray held the chips to the felt.

Plastic under floor slab

The 4-inch concrete ground slab for the building received special treatment. To prevent the gravel base from drawing the water from the concrete, crews placed Visqueen 4-mil plastic on top of the base. The added strength of slow curing was considered to be worth the trouble and expense of laying down the plastic. The floor was reinforced with wire mesh.

THE END

Road-school proceedings contained in bulletin

Engineering Bulletin No. 95, "Proceedings of the 44th Annual Road School," is offered free of charge by the Engineering Extension Department, Purdue University, Lafayette, Ind.

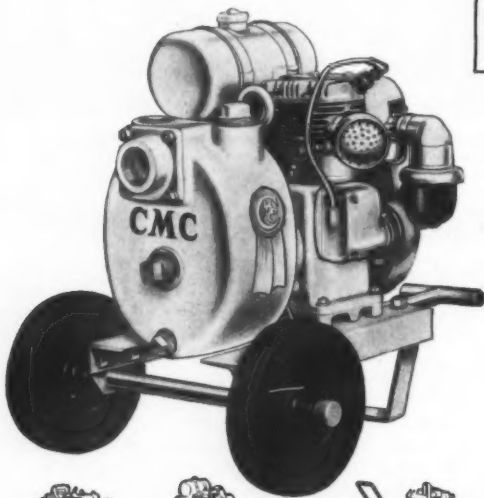
Some of the papers discuss the national highway program; the county road problem and the Interstate System; inspection and control of highway construction; design of shoulders; seal coats and surface treatments; and quality materials for highway construction. Other reports cover the value of planned access on urban bypasses; the application of photogrammetry to mapping for highway location studies; and planning for safety.

Filotechnica moves

The engineering and optical instrument firm of Filotechnica Salmolraghi, Inc., has moved to 254 Fifth Ave., New York City. The firm was formerly located in Long Island City, N. Y.

**you name
the job**

here's 50 ways to
faster, more dependable,
lower cost water handling
... every time!



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Golden 50

PUMPS

* The very ultimate in pumps . . . our golden anniversary line. 50 versatile models . . . 4,000 gph to 240,000 gph.

The greatest TIME, WORK, MONEY-SAVING FEATURES ever put in a pump! Permex self-lubricating ceramic seal; Hydro-Jet high efficiency, non-clog impeller; self-cleaning case; unitized construction.

There's a type and size CMC "GOLDEN 50" to fit every need . . . at a price to fit every pocketbook. DUAL PRIMERS - 1½" to 10"; DIAPHRAGMS - 2", 3" & 4"; HI-PRESSURES - 2" to 6".



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GET THESE LATEST PUMP FACTS AND SAVE MONEY!

Contact your local CMC distributor . . . or WRITE FOR NEW CMC "GOLDEN 50" PUMP CATALOG. Fully illustrated, gives complete details . . . makes it easy to select the right pump for the job.



Transit mixers



Building mixers



Central plant mixers



Hoe type mixers



Hoists

CONSTRUCTION MACHINERY CO. • WATERLOO, IOWA

For more facts, use Request Card at page 18 and circle No. 244

28-yd B Tournapull

18-yd C Tournapull

9-yd D Tournapull



35-ton capacity B Rear-Dump

7.5-ton C Rear-Dump

11-ton D Rear-Dump



18-ton Bottom-Dump



You can make up matched teams for maximum production on any size job from this complete line of LeTourneau-Westinghouse earthmoving machines. See "how" on the following pages:

10 & 20-ton Ride-Dumps



435-hp Twin-C² Pusher



215-hp Tournatractor



Drawn Scrapers (11.5, 18, 28 yd)



Sheep's Foot Rollers



Model 550: 160 hp 190 hp with torque converter



Model 550: 125 hp 145 hp with torque converter



Model 440: 115 hp



Model 330: 80 hp





Choose from
three sizes of Tournapulls...

First in the field and long "the standard of the industry", now better than ever. Choose from 335-hp, 28-yd capacity B 'Pull'; 226-hp, 18-yd "C"; or the 138-hp, 9-yd "D".

"B" and "C" size scrapers are of the famous fast-loading Fullpak design. Because bowl is low, dirt rolls in almost horizontally, doesn't have to be "lifted" in. Curved tailgate, crowned sidesheets, and deep apron belly keep dirt "boiling" for fewer voids, more solid "pay-pack." D 'Pull is only 8' wide, for permit-free road travel *anywhere*.

Standard on *all* 'Pulls is the patented power-transfer differential, which enables scrapers to keep moving in soft going. Another exclusive Tournapull advantage is fingertip electric controls... which give you the simplest and easiest-to-operate control system of all earthmoving machines.

...Each with
interchangeable haul units

These same famous Tournapull prime-movers also pull and power other trailing units. Most widely used of these is the well-known L-W Rear-Dump, available in 11, 22, and 35-ton capacities. With flared top, sloped sides, and low rear-entry, loading is fast and easy. Triple-layered, ribbed-steel construction assures long life. Pivot-steer allows machine to turn in less than its own length to get you up to and away from shovels and dump areas *quick*. Maintenance costs are lower because no-frame, no-spring, no-mainshaft construction *eliminates* most of the "troublemakers"! These 30 to 35-mph off-road haulers can be purchased separately, to attach to 'Pull prime-movers you now own, or as complete combinations.

Here's how to match ma ...for top profit in an

Whether you move 200,000 yards a year or 2,000,000, you'll need to move that dirt *faster* and *at less cost* than ever before. And no matter what size contracts you handle, it will pay you to assemble "matched teams" of greatest efficiency to suit *your* production needs. So look over these improved tools in the L-W line and measure their abilities to move today's dirt faster and at lower cost.

... in the "super" production range, for instance, there is the big B Tournapull® with 28-yd Fullpak® scraper... the 436-hp Twin-C® pusher... and the 190-hp 680 POWER-Flow® Adams® model grader.





Select from seven sizes of graders

Known the world over as the "quality line" of motor graders, L-W Adams graders combine more *production-boosting* advantages than any other make. **EXAMPLES:** all-welded, one-piece box frames, for greater strength, less deadweight. Rubber-mounted engines, to reduce vibration. Easy-operating controls for fast blade positioning. *Best* full-blade visibility. Full-floating drive-axles and anti-friction power trains. *Constant-mesh transmissions with 15 speeds!* And the advanced new **POWER-Flow** models with torque converters offer *infinite* gear ratios, always match power to load.

Seven sizes, ranging from 60-hp "220" to the big 190-hp **POWER-Flow 660**.

Match machines to jobs profit in any yardage range

...if you handle jobs that vary widely in yardage, the 18-yd "C" size "package", including the 218-hp Tournatractor® and the Model 550 grader, may be your answer.

...and to handle your odd jobs and clean-up duties at low cost, consider the combination of 9-yd D Tournapull and either the Model 440 or 330 grader.

Check over these combinations of LeTourneau-Westinghouse earthmoving machines. Then see your L-W Distributor. He can help you analyze your work and recommend a "package" best suited to your operation.



...and two **FAST** rubber-tired tractors

When LeTourneau-Westinghouse put tractors on rubber tires, it brought *speed* and *mobility* to tractor operations. Result: you can get *more* tractor work done, in *more* locations, with *ONE* machine, than you can with *two* crawler-units. You drive L-W tractors around your project-area at speeds to 17.2 mph. You dispatch them like you would trucks... anywhere there's work to do.

Every spread needs at least one Tournatractor... heavy construction's only *proven* tractor-on-rubber, with the "bugs" eliminated. This torque-converter-equipped 218-hp unit is available with all standard work-attachments, from a dozer blade to a railroad-car coupler.

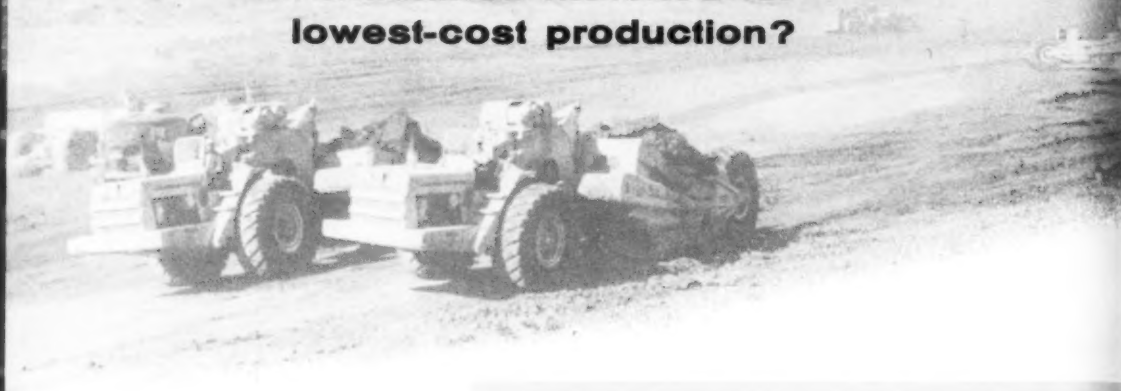
Developed especially for push-loading today's big, fast scrapers is the L-W *Twin-C* tractor, combining 40 tons of work-weight, 20 mph speed, and 436 horsepower. Twin engines (kingpin connected for maneuverability) plus synchronized torque-converter power trains help the *Twin-C* develop 64,500 lbs of drawbar pull.

please turn page



Are you ready?...

with machines matched for
lowest-cost production?



According to the Bureau of Public Roads' latest prediction, 1959 will be the first seven-billion-dollar year in roadbuilding history. This means more work for all of us... but you can bet your bottom dollar that work will be more and more competitive. In order to squeeze profit out of every job, you should be equipped to work machines properly matched in power, speed, and capacity.

In the LeTourneau-Westinghouse line, you can match scrapers, pushers, dozers, and graders, to step up your yardage. Certainly it is worthwhile to call in your L-W Distributor for a careful analysis of your present equipment. Get his suggestions on how to improve the performance of your fleet by matching a few new and faster L-W earthmoving machines with the better machines in your present line-up. You will find that by trading in your older, slower machines for modern L-W tools, you can *greatly* increase your profit-potential.

Trade now... while values are still high

Used machines as well as new, are moving out of your equipment distributors' yards at an accelerated pace. There's every reason to believe that equipment demand will equal (and may even exceed) the supply. That's why it is good business to trade now... while the market is still "bearish"... and dealers are in position to give you better deals. Better make it soon!

As an L-W equipment user you're backed up by these facilities



Distributor service

— prompt, dependable, and as near your phone. Your L-W Distributor is vitally concerned in seeing that your equipment is always in top operating condition, set for maximum production.



Field service representatives

— furnishing a direct link between you, your distributor, and the factory. Machinery experts in the construction field, they're available to team up with your distributor in getting the best from your L-W equipment.



Factory training schools

— extensive LeTourneau-Westinghouse training facilities, established to train distributor's servicemen, and to train your own mechanics in on-the-job service and maintenance.



LETOURNEAU-WESTINGHOUSE COMPANY

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company
Where quality is a habit

Well balanced earthmoving fleet keeps dam job ahead of schedule

A small fleet of scrapers, rock wagons, and trucks brings construction on the Thomaston (Conn.) Dam two months ahead of schedule. The earth-rock structure for the U. S. Army Corps of Engineers is designed to reduce flood damage along the Naugatuck River, from Thomaston to the Housatonic River.



A small, well balanced earthmoving fleet has put construction two months ahead of schedule on the Thomaston (Conn.) Dam. Oneglia & Gervasini, Torrington, Conn., is moving so fast that they had to build, at their own expense, a bypass for State Route 8 to allow work to continue.

Thomaston Dam, a 1½-million-yard earth-rock structure, will rise 142 feet above stream bed in the Naugatuck River valley six miles above Thomaston. The dam will stretch 2,000 feet across the valley and will have a 546-foot maximum base width. Upstream slopes will be 2 to 1 and downstream slopes 1½ to 1. The \$4,214,918 project for the U. S. Army Corps of Engineers is designed to reduce flood damage along the Naugatuck River, from Thomaston to the Housatonic River.

Site clearing

Four Caterpillar D7 tractors cleared the entire area in five weeks. The contractor then lined up the equipment into three major spreads and had a few machines on tap for miscellaneous jobs. Materials to be moved included 205,000 yards of common excavation, including stripping; 705,000 yards of rock excavation; and 715,000 yards of random borrow. The rolled earth embankment will contain 700,000 yards of random and impervious fill; the 720,000 yards of rock fill is largely broken granite.

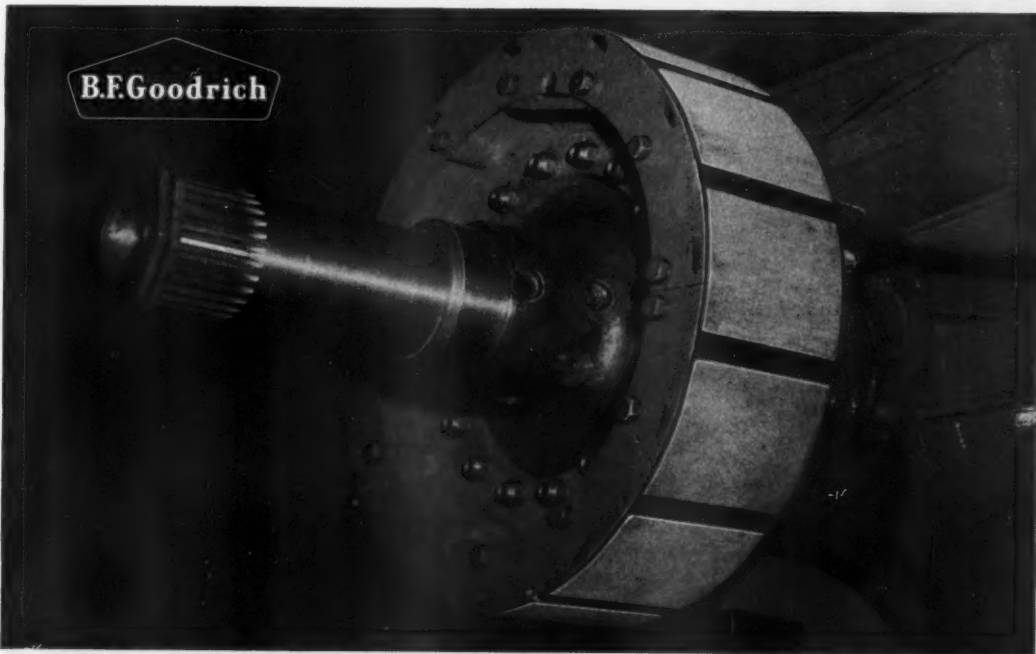
Rear-dump rock wagons haul rock from a railroad cut; scrapers load out clay from a borrow pit; and trucks shuttle between the spillway on the east bank and the channel excavation.

Rock cuts

Twin-boom Ingersoll-Rand drills, mounted on Cat D8 tractors, and wagon drills punch 26-foot-deep holes in the hard granite, quartz, and lead. The holes are loaded with Atlas 40 and 60 per cent dynamite and are shot daily. Average yield is about a yard of rock per pound of explosive.

Broken rock is loaded by a North-west 80D shovel into three Cat DW21's with Athey PR21 rear-dump rock wagons. Trucks are sometimes used, but as the cut narrows to its 30-foot base width, only the rear-dump rock wagons can turn around

(Continued on next page)



The only off-road brake with full circle stopping power

Tests prove the B.F. Goodrich Hi-Torque Brake can stop your heavy equipment faster, safer !

Tractor-Scraper Test

	B. F. Goodrich Hi-Torque	Conventional two-shoe brake
Stopping distance	41' 9"	72'
Speed	14.83 mph	15.17 mph
Load	heaped	heaped

Two identical tractors and scrapers were used for this test. Unit fitted with B. F. Goodrich

Brakes stopped almost twice as fast as unit using regular production brakes.

Off-Highway Truck Test

	B. F. Goodrich Hi-Torque	Conventional two-shoe brake
Deceleration rate	18 Ft/sec ²	7 Ft/sec ²
Speed	25 mph	25 mph
Gross vehicle weight	112,000 lbs.	112,000 lbs.
Wheel condition	sliding	rotating

Popular 24-ton capacity off-highway truck with original production brakes was run over test course. Immediately after fitting the same

vehicle with B. F. Goodrich Brakes, the truck made the same run again, stopping almost two and a half times as fast.

For more information on how the B. F. Goodrich Hi-Torque Brake can help your equipment operate more safely, more dependably, write B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Dept. CE-29, Troy, Ohio.

B.F. Goodrich Hi-Torque brakes

For more facts, use Request Card at page 18 and circle No. 246



Rocky clay for the impervious and random sections of the dam is stripped from a borrow pit by a Caterpillar DW21 tractor-scraper push-loaded by a D9. The scrapers complete a 3,000-foot haul to the embankment in 10 minutes.

inside the cut. The rock wagons average six loads per hour on a 1,500-foot one-way haul.

To protect the crews working in the cut, the contractor covered the sheer 1 to 4 faces of the cuts with steel mats that hold back loose rock. Water, seeping from the walls, runs ankle-deep down the cut.

Earthmoving

Most of the earth comes from a borrow pit, southeast of the dam. Four Cat DW21 tractor-scraper push-loaded by a D9 tractor move down to the river, ford the fast-moving stream, cross a meadow, and climb the highway to the west end of

the dam. The 3,000-foot haul to the embankment is completed in 10 minutes.

Six Euclid rear-dumps worked the channel and spillway excavation. A Link-Belt 3-yard dragline cuts the channel, while another Northwestern 80D works the shot rock of the spillway. Two D7's, a D4, and a P&H backhoe handle utility jobs. Highway maintenance and fine-grading are covered by a Caterpillar motor grader and a Warco grader.

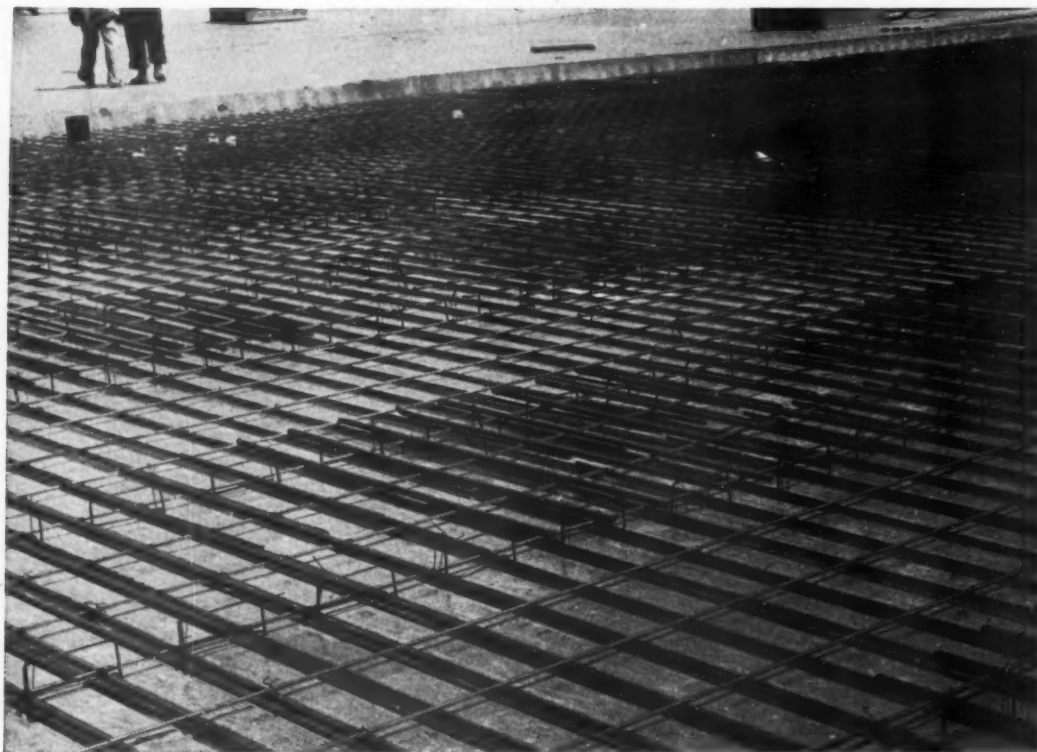
On the embankment, three D9's equipped with dozers and rock rakes separate the rock from the dirt and spread the fill. A Bros 50-ton pneumatic roller and a Bros double-drum sheepsfoot roller, pulled by D9's, compact the fill.

Project features

The 1,465-acre reservoir will normally be dry, although 15 feet of water will be stored during the winter to prevent the gates from freezing. Normal flow will pass through a 40-foot-long 10-foot-diameter horseshoe-shaped reinforced-concrete conduit under the dam. Two hydraulic slide gates will control flow. The slide gates will be operated from an upstream gate tower connected by a 152-foot service bridge to the top of the dam.

Other features of the project include locating a mile-long rail line; a 105-foot-deep rock cut for the railroad; and a temporary railroad bridge. Work will start on the east embankment this spring, after the conduit along the old stream bed is completed.

THE E&E



LACLEDE PREFABRICATED SLAB REINFORCEMENT SAVES 100,000 TIES IN NEW PLANT CONSTRUCTION

Laclede multi-rib round reinforcing bars shop welded into special prefabricated units saved hours of costly time in the construction of floor slabs for Chrysler Corporation's new St. Louis Assembly Plant. Eighty-seven thousand of these top and bottom steel reinforcing units, each consisting of two bars up to 15' long welded to supporting frames, were used in the construction of 485,000 square feet of flooring.

Fabricated to extremely accurate dimensions, units were easily handled and dropped into place on the metal deck. Approximately 100,000 ties were saved by the use of these special Laclede-designed units.



CHRYSLER CORPORATION ST. LOUIS ASSEMBLY PLANT
St. Louis County, Mo.
General Contractor: H. D. Tousley Co., Inc., Indianapolis
Architect: Albert Kahn,
Associated Architects and Engineers of Detroit

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI

Producers of Steel for Industry and Construction

For more facts, use Request Card at page 18 and circle No. 247

Report on urban research in planning of highways

Bulletin 190, "Urban Research in Highway Planning," is available for 80 cents from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

The bulletin contains five papers on: planning and research implications of the Washington (D. C.) transportation study; regional research and highway planning; physical environment and mental health; urban arterial developments which benefit the community; and visual approach to highway planning and design. Pictures and charts supplement the text.

Alkali and aggregate reaction in concrete

Highway Research Board Research Report 18-C, "The Alkali-Aggregate Reaction in Concrete," contains a summary of field experience, laboratory tests for reactivity of aggregates, and a review of the fundamental research to show the mechanism of the reaction.

Many of the papers include a list of references, tables, and pictures.

The \$1 bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

CONTRACTORS AND ENGINEERS



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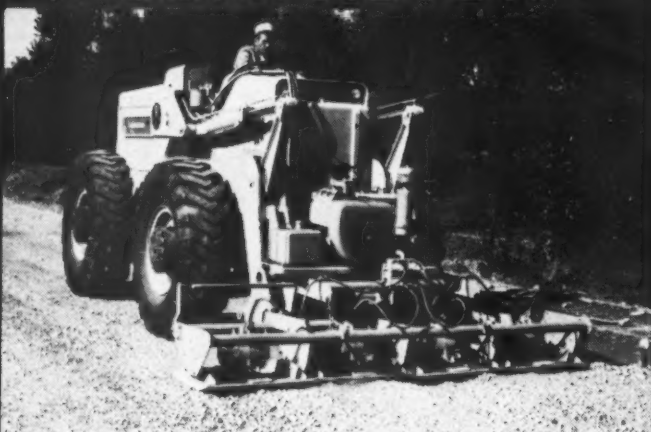
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SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

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Only **PAYLOADER®** gives

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GALION VIBRATORY COMPACTOR develops specified densities in all granular soils. Four 30-in. shoes have individual electric motor power. Each delivers 3,600 to 4,200 three-ton blows per minute. Compaction width is 10-ft. Individual shoes can be removed for manual operation.

SIDE BOOM



SUPERIOR-HOUGH SIDE BOOM does not interfere with bucket use. Has complete hydraulic control and power — lifts 10,000-lbs. at 4-ft. overhang, more than a ton at 14-ft. overhang. Boom telescopes from 10 to 16-ft. maximum. Cable drum has free-spooling safety release.

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DROTT "4-IN-1" BUCKET — Patented, multi-purpose all-hydraulic controlled bucket enables a "PAY-LOADER" to perform shovel, clamshell, scraper and bulldozer work — jobs that usually require several special machines — without losing a minute's time to make equipment changes.

LEAF LOADER



RAM LOADER is equipped with individual hydraulic motors to operate reel and each of three conveyor belts. City reports it picks up 90% of bulk and saves as much as 30% of leaf loading costs. Also has valuable secondary use in fringe snow areas as a loader.

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you this **VERSATILITY**

SPREADER



RAM BLACK TOP SPREADER handles hot or cold mix for patching or paving. Unit has separate power and all-hydraulic controls — rides on own pneumatic tires. Lays up to 8-ft. widths, adjustable from 0 to 48-in. Thickness also adjusts 0 to 6-in. Hopper capacity — 2 cu. yd.

BACK HOE



WAIN-ROY BACK HOE — This finest of back hoe attachments, with all-hydraulic controls, has a 12-ft. digging depth and a working radius of 190° for both digging and dumping at right angles. Cuts vertical sides, square corners, level grades — digs bell holes, trenches, pits.

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RAM ROTARY PLOW — Separate power unit drives blower to load trucks or cast to either side. Double or triple augers available. **FORK LIFT** easily interchanges with bucket. Adjustable spacing fits various sizes of loose or pallet loads. Powerful hydraulic controls handle heavy loads.

FORK LIFT



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FEBRUARY, 1959

For more facts, use coupon or Request Card at page 18 and circle No. 251

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Four draglines cut a 20-foot-deep section the width of the Edsel B. Ford Expressway in Detroit. In the foreground, a Bay City Model 65 dragline uses a Page 1½-yard bucket on the right bank. Two Lorain cranes work the middle portion, and an American 795, the slope on the left bank. Four spreads with 50 trucks each moved 15,000 yards of dirt per 8-hour day.



The difference between today's equipment and that of 14 years ago shows up in the bid price on the 2-million-yard job. Excavation was done at \$1.38 per yard—much lower than the 1945 unit price in bids of the contractor, Charles J. Rogers, Inc., Detroit. The American 795, foreground, uses a Hendrix 2½-yard bucket. The two Lorains are just behind.

Draglines tackle big expressway cut

Fleet of 15 rigs moves 15,000 yards of dirt daily as it cuts two 36-foot-wide expressway lanes through the city of Detroit

by **BILL ALLEN**
field editor

Moving 15,000 cubic yards of dirt per 8-hour day through city streets is a big job. In fact, it amounts to the biggest truck and dragline operation the city of Detroit has seen in many years.

With 15 draglines and some 200 trucks, Charles J. Rogers, Inc., Detroit, is making the dirt fly along the Edsel B. Ford Expressway. The draglines eat away tirelessly at the big expressway cut, while the trucks push their way through some 10 miles of city traffic.

The 2 million yards of dirt is not only being moved fast, it is also being moved cheap. Rogers, which has most of the excavation contracts on the expressway, bought the dirt for about \$1.38 per yard. This figure is actually lower than the unit price bid for city dirt back in 1945.

In looking over records of 14 years

CONTRACTORS AND ENGINEERS

Using a Hendrix bucket, the American loads a Reo F50 tandem-axle truck to 80 per cent capacity to comply with the limited axle loads permitted on city streets. When possible, trucks used completed access roads as haul roads. The city Traffic Bureau worked with the contractor in laying out lightly traveled routes to dump areas.



ago, Mr. Rogers found company bids ranging from \$2.75 to \$5 per yard. Since that time, the price of cranes has nearly doubled and the cost of labor tripled, yet the dirt is now being moved at less than half the price. Better equipment, bigger jobs, and more efficient organization are part of the answer for the lower price.

With the help of interstate funds, construction on the easterly leg of the Edsel B. Ford Expressway has been steadily pushing out from the center of the city. The greater share of the dirt is being moved by Charles J. Rogers, Inc., which, in a joint venture with The Cooke Contracting Co., Detroit, handled four major contracts involving 2 million yards of excavation and totaling \$6 million. Rogers handles the dirtwork and drainage, while Cooke does the paving.

Contracts let in two stages

Generally, two contracts are let for the construction of a given length of the expressway. In Stage I, the utilities are put in and the service roads built. The utilities are relocated beneath the service roads, which border the depressed expressway at ground level. During this stage, the service roads are paved with either 22 or 30-foot-wide concrete pavement.

In the second stage of construction, excavation is made for the two 36-foot lanes of the expressway. The contract also includes drainage, base course, and concrete paving.

Bridges, which may be let as a separate contract, are usually built before excavation is done. The contractor digs a hole and then builds a bridge across it. Although this may seem strange, it permits traffic to be conveniently detoured around the bridge during construction.

Work divided into four sections

Rogers cut his 2 million yards of dirt into four chunks and handed each to a superintendent. Each super had about four draglines and 50 trucks, and a hankering to out produce the other superintendents. It was this kind of competition that helped boost the over-all production to 15,000 yards per 8-hour day.

Each dragline in a spread of four cut out a portion of the width of the expressway cut. The two outside draglines cut the 2 to 1 backslopes. To allow plenty of room to swing and load, the 1½ to 2½-yard rigs were stationed at intervals down the length of the cut. The draglines generally started at one bridge and worked easterly to the next structure. The average cut was 15 feet.

Predominant among the 15 draglines on the job were the Bay City 65 1¼-yard rigs, which were owned by Rogers. One of the largest draglines was an American 795 with a Hendrix 2½-yard bucket. Lorain, Lima, and Link-Belt cranes also moved their share of the dirt.

Trucks fight city traffic

It was no small problem to move some 2,000 truck loads of dirt per day about ten miles through heavy traffic to dump areas outside the city. In

(Continued on next page)



In a different section of the expressway, another spread of draglines works another area between bridges. In the spread is this Bay City Model 65 using a Page 1¼-yard bucket to load a Mack truck.



Cuts hardfacing time in 1/2 with Victor semi-automatic Wire



When this 84" dredge pump impeller's action became sloppy from 250,000 cu. yds. of abrasive river material, The Corps of Engineers at Portland, Oregon, built it back to proper size and shape with Victor semi-automatic hardfacing wire.

For the multiple build-up required, welder Maynard Berry (left in photo) used Victor VA-4X 7/16" wire. Then he deposited a top pass with VA-0 7/16" wire, especially resistant to abrasion. Photos here show how neatly he and Victor semi-automatic wire did the job.

Reports welding foreman D. L. Brumbaugh:

"One-half the hard-facing time was saved. We have had exceptionally good quality weld deposit with Victor and we like its running quality."

You, too, will find it pays to renew worn equipment with Victor hardfacing alloys. Complete range of types and sizes for both acetylene and electric AC and DC applications, either automatic or hand. Order from your Victor dealer TODAY.

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Profitable dealership open; inquire now!

VICTOR EQUIPMENT COMPANY

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order to keep the truck and passenger car traffic moving as smoothly as possible, the city Traffic Bureau worked with the contractor to designate certain routes to the dump areas.

Loading restrictions on city streets limited the amount of dirt that the tandem and trailer trucks could haul. The 10-yard tandem dumps, which were most commonly used, could be loaded only to about eight yards.

The access roads, which had been paved under earlier contracts, made convenient haul roads. Whenever possible, the trucks took advantage of the new concrete.

The draglines not only cut the 2 to 1 backslopes of the cut, but they did much of the finish work as well.

To smooth off the slope, a dragline handled a special timber mat with a steel cutting edge on its bottom. The heavy mat was dragged up the slope to plane down the irregular surface.

Drainage

After the rough excavation for the expressway cut was completed, a trenching machine worked its way down either side of the cut near the toe of the slope. These side trenches received 6-inch open-joint pipe for draining the outside shoulders. This pipe drains to a 12 to 30-inch sealed-joint concrete pipe beneath the median. Alongside the main drain beneath the median is another 6-inch open-joint pipe. All water drains into the large concrete pipe. At intervals, the water is lifted by pumps to the

city storm-sewer system.

The general superintendent for Charles J. Rogers, Inc., is George Morgan. Division superintendents are James Gothard, Charles Sower, Charles Pfaff, and Angel Robelli.

The district engineer for the Michigan State Highway Department is C. H. Brown. The district road engineer is Frank C. Skebensky. The four expressway project engineers are Adam Sypitkowski, James Lindemuth, Jr., John Wisniewski, and Charles Anderson.

THE END

A record low fatality rate of 0.88 deaths for each 100 million vehicle miles traveled was established in 1958 on the New York State Thruway. The previous low was 1.94 highway deaths in 1957.

For more facts on Insert, circle No. 255.

NRMCA-NSGA convention to meet in New Orleans

The forty-third annual convention of the National Sand and Gravel Association and the twenty-ninth annual convention of the National Ready Mixed Concrete Association will be held February 16 to 19 in New Orleans. The Roosevelt Hotel is the main headquarters for the convention.

Panel discussions will be held each of the four days. Topics to be treated include a public-relations and safety course for drivers; what a state association can do for the industry; evaluation of dust and noise conditions at sand and gravel plants; depreciation and salvage values for various purposes; cost controls for truck and plant maintenance; and what the market holds for sand and gravel and ready-mix concrete in 1959.

Also under discussion will be an analysis of plant transportation by belt versus heavy-duty trucks coupled with shovel excavation; merchandising ready-mix concrete; plant-mix gravel-sand-clay mixtures for stabilized base; effective uses for mobile radio in a ready-mix concrete operation; and prestressed concrete from the point of view of the ready-mix concrete operator.

Engineering firm renamed

The firm of Lindsey, Carter & Associates, Inc., consulting engineers and land surveyors, has changed its name to Carter, Krueger & Associates, Inc. Archie N. Carter, for the past two years vice president and treasurer of the firm, has been made president and treasurer. Norman O. Krueger, formerly secretary, has been elected vice president and secretary.

The firm has moved to new offices at 3381 Gorham Ave., Minneapolis, Minn.

AGC pocket-size reprints on accident prevention

Fourteen pocket-size reprints on various subjects, from its "Manual of Accident Prevention in Construction", have been published by The Associated General Contractors of America, Inc.

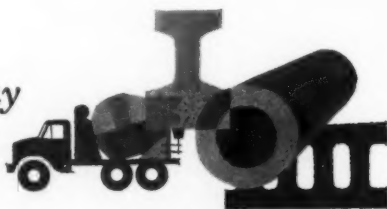
The booklets deal with such subjects as scaffolding and ladders; explosives and powder-actuated tools; housekeeping and sanitation and fire aid; welding and cutting; flammable gases and liquids; handling and storage of materials and equipment; keep; excavation and shoring; barricades and pipelines; pile-driving and marine equipment; and concrete construction.

Other booklets deal with hoists, cranes, and derricks; highway construction; heavy equipment; garages and repair shops; tunnels and compressed-air work.

The booklets may be purchased from AGC, 20th and E Sts. N.W., Washington 6, D. C., for 15 cents per single copy, \$1.20 per dozen, and 10 per hundred.

CONTRACTORS AND ENGINEERS

Here's the
practical, proven way
to Pre-mix!



THE SMITH TURBINE-TYPE MIXER

If you've wanted to pre-mix, but winced at the cost of converting — here's the answer to your problem!

The Smith Turbine Mixer — proved successful in over 100 installations — is a compact, lightweight, vibrationless mixer that can be easily installed in your batching operation.

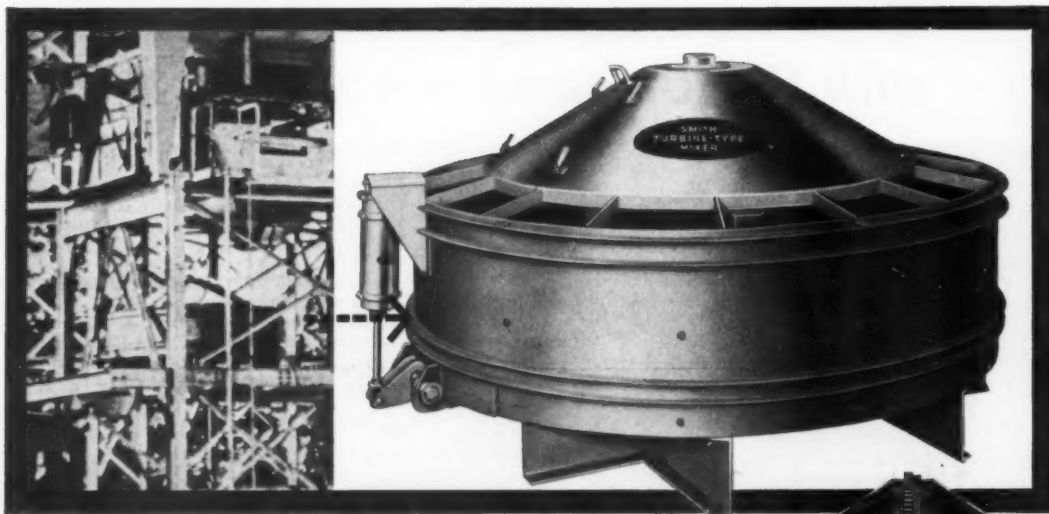
If you're building a new pre-mix plant, use of the Smith Turbine permits lighter, lower, less expensive structures.

If you're converting an old plant to pre-mix, the Turbine can frequently be installed without extensive, major modifications — in places where no other mixer will fit!

Cycle time with The Smith Turbine is fast enough to charge up to 20 trucks an hour. What's more, the Turbine can discharge in four different directions, allowing you to alternate wet and dry mixes — handle ready-mix, block, pipe, or pre-stressed batches all in the same machine.

Investigate the Smith Turbine. Write or call — we'll gladly tell you in detail how others are finding it the ideal way to beat competition while supplying higher-quality pre-mix!

Making dollars and sense in over 100 successful installations!



Since 1900, the pioneer designer and foremost manufacturer of the world's finest mixers

THE T. L. SMITH COMPANY

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Affiliated with Essick Manufacturing Company, Los Angeles, Calif.



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CONCRETE

The Right Climate For Underground Operations

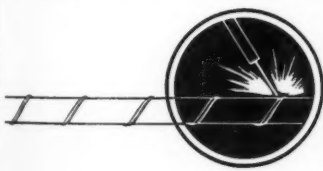


Keeping underground working areas free of gases and fumes and supplying fresh air for tunnel work is no problem when you use NAYLOR Spiralweld pipe lines.

This dependable pipe is light in weight, easy to handle and install, strong and safe in

service—particularly on push-pull ventilating operations. And when you make connections with the NAYLOR one-piece Wedge-lock Coupling, you can set up lines quickly with just one side of the pipe in the open.

For the details, write for new Bulletin No. 59.



NAYLOR PIPE *Company*

1270 East 92nd Street, Chicago 19, Illinois

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XUM



"Penn-Can Highway" contractor slashes downtime on 30 pieces

GULF MAKES THINGS RUN

S. J. Groves & Sons Company of Syracuse, New York, can tell you how Gulf makes things run better.

Twenty-eight scrapers, 48 pushers and dozers, 16 shovels, 18 mobile cranes, 42 rollers, 53 trucks—all told more than 300 of their big units run on Gulf fuels and lubricants. And they run with an unusual record of day-to-day availability—with downtime kept at a minimum on an important Federal Highway project.

S. J. Groves is doing all the grade separations, approaches and landscaping for 16 miles of highway and 15 miles of access roads on the "Penn-Can Highway,"

part of the Federal Highway System in upper New York State. Photo above shows work on the Oswego Boulevard section in Syracuse where 250 buildings were moved to form a connecting link to the highway.

Keeping all the equipment running is the responsibility of Wilson Fosdick, Maintenance Superintendent, N.Y. District, and Clarence Van Orden, Shop Foreman. "Good fuel and oil keep engines clean," says Mr. Van Orden, "and that eliminates 75% of engine maintenance problems and emergency calls to get stalled equipment back on the job."

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"bible"

GULF O
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Jack Con
equipmen



on 30 pieces of heavy equipment...

GSRUN BETTER!

Gulf can make things run better for you, too. Call your nearest Gulf office, or send for "Contractors' Guide" — the maintenance "bible" for heavy equipment.



GULF OIL CORPORATION

Dept. DM, Gulf Building, Pittsburgh 30, Pa.

Jack Conway, left, Grading Superintendent of S. J. Groves, discusses equipment performance with Gulf representative, H. A. Martineau.

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The CLEVELAND 240 TRENCHER

12' x 2½' **V** CONVEYOR

- Power-Shifted
- Power-Folded

controlled from operator's seat

**WORLD'S FINEST
TRENCHER CRAWLER**

DIGS FULL 3' WIDE by 6'3" DEEP



For 20" dia. pipe 240 here digs trench to average 4' deep, 34" wide at bottom, sloped to approx. 5' wide at top.

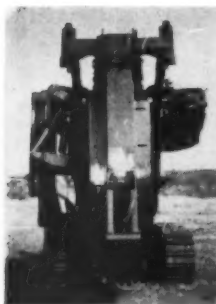
V CONVEYOR... provides maximum clearance under digging wheel rims... allows higher heaped loads without clogging... provides constant elevating angle for faster, higher spoil discharge... reduces rolling and tumbling... has stronger, torsion-free construction... employs huskier, longer-lived bearings.

POWER-SHIFT... operator controls hydraulic shifting and positioning of conveyor... digs past poles, trees, fences... places spoil where needed... all without leaving seat, without interrupting other operations.

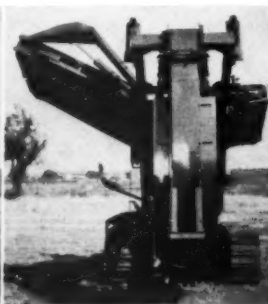
POWER-FOLD... brings conveyor's 12-foot length down to within trencher's overall 8-foot

width... permits transport without special highway permits... same automatic system unfolds conveyor to digging position.

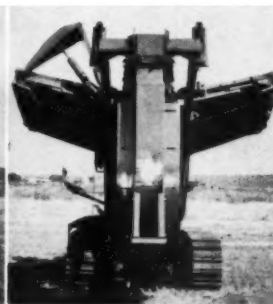
FINEST CRAWLER on any trencher... double flanged wheels, rollers and sprockets with wide spaced teeth... drives on each end of 1½" dia. hardened pins... completely eliminates pockets for dirt, stones, etc... gives greater track stability... lengthens wear life... sprockets, wheels and idlers ride on sealed ball or roller bearings requiring only 200-hour lubrication... has big 16" x 3" hydraulic steering brakes... a tremendously long-lived, trouble-free, easy-rolling crawler track.



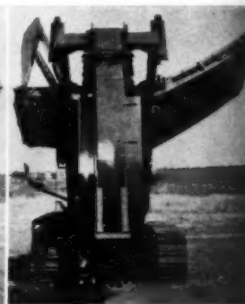
Power-folded



Power-shifted, left



Centered V Conveyor



Power-shifted, right



The CLEVELAND TRENCHER Co.

20100 St. Clair Avenue

Cleveland 17, Ohio

For more facts, use Request Card at page 18 and circle No. 256

Avoid Legal Pitfalls

Cases on implied promises to pay for work done

THE PROBLEM: Usually a contractor's right to pay depends upon the existence of an agreement, shown by the terms of an explicit contract or to be implied as a matter of fact. But often the law, in order to do justice, will create a right to reasonable compensation for services that have been rendered, despite lack of contractual obligation.

A landowner induced a contractor to assist him in preliminaries to the construction of a building to be financed through F. H. A. It was mutually contemplated that if such financing were secured the contractor would be awarded a construction contract—on terms to be later agreed upon. The contractor made distant trips to confer with architects, secured a drilling log on and survey of the property, and helped prepare such plans, specifications, and cost data as were needed in applying for an

tended to make a contract but failed to articulate their promises and the court merely implies what it feels the parties really intended. It would follow then that the general contract theory of compensatory damages should be applied. Thus, if the court can in fact imply a contract for services, the compensation therefor is measured by the going contract rate.

"An 'implied in law' contract, on the other hand, is a fiction of the law which is based on the maxim that

one who is unjustly enriched at the expense of another is required to make restitution to the other. The intentions of the parties have little or no influence on the determination of the proper measure of damages. In the absence of fraud or other tortious [wrongful] conduct on the part of the person enriched, restitution is properly limited to the value of the benefit which was acquired.

"The distinction is based on sound reason, too, for where a contract is all but articulated, the expectations of the parties are very nearly mutually understood, and the court has merely to protect those expectations as men in the ordinary course of business affairs would expect them to be protected, whereas in a situation where one has acquired benefits, without fraud and in a non-tortious

[not wrongful] manner, with expectations so totally lacking in such mutuality that no contract in fact can be implied, the party benefited should not be required to reimburse the other party on the basis of such party's losses and expenditures, but rather on a basis limited to the benefits, which the benefited party has actually acquired".

Materialman or sub?

THE PROBLEM: A concrete company agreed to deliver ready-mix into a general contractor's construction forms on a housing project. While a delivery was being made by one of the company's drivers, an employee of the contractor was injured, allegedly through negligence of the driver. The injured man sued the

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

F. H. A. loan. The contractor expected to be reimbursed for these expenditures out of profits to be derived from the prospective construction contract.

F. H. A. made a loan commitment, but the parties failed to agree upon the terms of a construction contract. The owner contracted with another builder but derived benefits from the first contractor's plans and services. The latter sued for damages, but the case was tried without a distinction being drawn between the measure of damages for an owner's breach of an implied contract between the parties and the measure of damages where, in the absence of such contract, the law will imply an obligation to pay the reasonable value of services received, although in fact he has not implicitly or expressly agreed to pay anything. In these circumstances was the contractor entitled to at least the reasonable value of his services, plus expenditures?

THE ANSWER: Yes. (Hill v. Waxberg Construction Co., 237 Fed. 2d 336, decided by the United States Court of Appeals, Ninth Circuit.)

For the benefit of readers interested in the technical distinctions involved in this case, we quote the following from the court's opinion:

"An 'implied in fact' contract is essentially based on the intentions of the parties. It arises where the court finds from the surrounding facts and circumstances that the parties in-

NEW MANITOWOC TRUCK CRANES

... Now you can get the
famous Manitowoc crane
performance on rubber

45 TON MODEL 2800

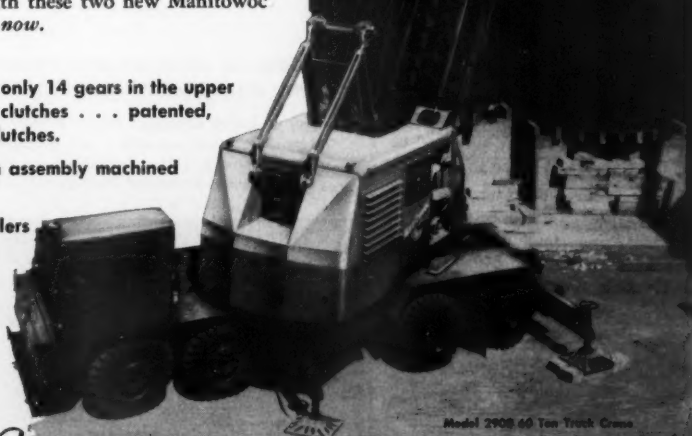
60 TON MODEL 2900

The superior precise control, cycle speed and lifting capacity you get only in Manitowoc crawler cranes is now available in two new Manitowoc truck cranes. With a full 45 ton capacity, the Model 2800 truck crane will easily handle most of your crane jobs. For the bigger, high lift jobs, the Model 2900 has a true 60 ton capacity to meet most any lifting assignment.

Both rigs feature smooth torque converter drive to provide the most accurate control for precise lift work. The double-drum, worm drive independent boom hoist provides more speed in raising and lowering, and equalizes pull on the boom to minimize cable wear. Short throw air controls are available if the rigs are put to dragline or clamshell use. Widespread, sturdy outriggers have heavy duty, bridged-aluminum pads for positive "high lift" stability. Big, rugged carriers travel at highway speeds, give you mobility that can't be matched by many smaller truck cranes.

Your Manitowoc distributor is the man to see for all the profitable advantages you get with these two new Manitowoc truck cranes... give him a call now.

- Simple, power-saving design uses only 14 gears in the upper works. Precise, disc-type swing clutches... patented, plunger drum control on main clutches.
- Massive ring gear and roller path assembly machined from tough, rolled tire steel.
- Adjustable, self-aligning hook rollers with precise, 12-point adjustment to keep rollers perfectly matched with the roller path.
- Self-removing counterweight is standard equipment. Scientific load distribution assures legal load limit.



Manitowoc

MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)

MANITOWOC, WISCONSIN

CRANES

SHOVELS

DAGLINES

TRENCH HOES

25 TON - 100 TON

1 1/2 YD. - 5 1/2 YD.

1 1/2 YD. - 4 YD.

1 1/2 YD. - 3 YD.

For more facts, use Request Card at page 18 and circle No. 257

was negligent in selecting a cold-mix joint compound instead of a hot-mix compound, although the specifications called for either. Did the contract amount to a warranty that infiltration would not exceed 1,200 gallons per mile per day?

THE ANSWER: No. (Goodwin v. Village of Firth, 319 Pac. 2d 970, decided by the Idaho Supreme Court.)

The court said the contractor was merely bound to lay the sewer according to the plans and specifications. That is, he was liable for defective performance and the cost of remedying the defects, but not for the cost of providing a sewer that would exclude water in excess of

1,200 gallons per mile per day.

The court cited, in support of its conclusion that there was no guaranty of maximum infiltration, a decision by the New York Court of Appeals to the effect that a contract to construct a waterproof basement was not a guaranty of the owner's plan, but a guaranty of performance according to the plan.

Contractor's bond

THE PROBLEM: A prime contract with the Massachusetts Turnpike Authority called for a bond to pay for "labor or material" used on a project. Did the bond protect a car-

rier for service rendered a subcontractor?

THE ANSWER: No. (Saw Mill Supply, Inc., v. Hartford Accident & Indemnity Co., 172 N. Y. Supp. 2d 600, decided by the New York Supreme Court, Appellate Term, First Department.)

Because the prime contract was made and was to be performed in Massachusetts, the court said that the case was governed by Massachusetts law, but that the same decision would be called for if New York law governed.

However, there are many appellate court decisions in other states to the effect that haulage services are to

be regarded as "labor" for lien or bond protection purposes under certain circumstances.

Equipment leases

THE PROBLEM: To facilitate concrete construction, a contractor leased equipment from defendant, a forms company, under an agreement that he would employ a foreman to supervise the use of the equipment, satisfactory to the company. A man suggested by the company, but not in its employ, was engaged as foreman by the contractor. The company had no control over this man in the performance of his duties, being merely interested in having a dependable person oversee the use of the equipment and gather data upon which rental charges would be computed under the rental contract. Plaintiff, an employee of the contractor, was injured by a falling scaffold—part of the lease equipment—due to alleged negligence of the foreman in directing its assembly. Was the forms company liable to the injured man on a theory that the foreman was its representative?

THE ANSWER: No. (Coble v. Economy Forms Corp., 304 S. W. 2d 47, decided by the Springfield, Mo., Court of Appeals.)

The court said that the foreman was no less the contractor's employee in the assembly of the scaffold because the company paid him a bonus and mileage in going to the job site.

Lesson on contracts

THE PROBLEM: Wilson intended to build a causeway connecting the shore with an island, if the county should not construct one. Architect-engineer Hardy knew this. They agreed orally that Hardy should prepare bidding plans and specifications, construction plans and specifications, and supervise construction. The only provision for his compensation was that he should be paid a fee of 5 per cent of the cost of construction.

Hardy prepared plans and specifications that were sufficient for receipt of bids, but not for construction. Wilson abandoned the project because the county built a causeway. Was Hardy entitled to damages on a theory that Wilson broke the contract?

THE ANSWER: No. (Wilson v. Hardy, 309 S. W. 2d 114, decided by the Texas Court of Civil Appeals, San Antonio.)

The court decided that it was up to the architect-engineer to insist upon an understanding as to what compensation he should receive, if any, for his preliminary work if the project should be abandoned because of the county building a causeway.

It is to be noted that the suit was for damages for loss of contemplated profits, not to collect for the reasonable value of services actually rendered. But the court seemed to intimate that Hardy could not have collected for those services—that he had "gambled" all right to pay on the county not building the causeway.

—For more facts, circle No. 258

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High-percentage availability proves inbuilt stand-up-ability!

98.5 work availability through one measured 12-week period is the mark set by a 10-unit "95" Payhauler fleet—high-balling rock over steep High Sierra grades, on mammoth Pool Hydro Project, for Southern California Edison Co. Such records result from reserve power, reserve frame and transmission strength, and reserve shock-resistance!

Another thirty "95" Payhaulers join Merritt-Chapman and Scott fleet!

Merritt-Chapman and Scott Corporation has added thirty more "95" Payhaulers to their Niagara Power project equipment spread. Now, the M-C and S Payhauler fleet totals 62 units—largest in the world! On St. Lawrence Seaway, huge Glen Canyon dam, and Niagara Power Project, M-C and S have proved rock-lugging, grade-beating Payhauler performance—and confirmed their satisfaction with repeat orders.





A twin box-girder bridge on the Mark Twain Expressway near St. Louis takes honors as a most unusual bridge project. Crews are forming the 2½-inch work slab on which the deck will be formed. Natural ground has been cut down to the level of the underside of the bridge deck; columns were formed by drilling caissons and pouring concrete to ground level.

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offers complete
"on-site"
fastening
service



Only Ramset offers the exclusive "plus" of complete on-the-job fastening service for contractors. Complete Ramset training on the proper use of powder actuated fasteners and tools covers most construction needs. But, if and when special problems come up on selection of fasteners or fastening "know-how", Ramset experts will come right to the job site with the correct answers.

"On-site" service is another Ramset exclusive which has made this powder-actuated system the best known and most widely-used in all phases of construction.

For the name of your Ramset dealer look under "Tools" in the Yellow Pages, or write direct for further information.

In addition to powder-actuated fastening, the versatile Ramset System includes Shure-Set hammer-in tools for light fastening, and Ringblaster heavy-duty kiln gun.

Ramset Fastening System

WINCHESTER-WESTERN DIVISION • OLIN-MATHIESON CHEMICAL CORPORATION
BEREA ROAD • CLEVELAND, OHIO

For more facts, use Request Card at page 18 and circle No. 259

Bridge deck is formed on natural ground— excavation follows

Sometimes, putting the cart before the horse is the smart thing to do.

This turned out to be the case for a twin box-girder bridge on the Mark Twain Expressway near St. Louis, Mo. The deck of the bridge was formed on a thin concrete work slab resting on natural ground. Before the deck was built, columns of the four spans were set in drilled holes. It was only after the bridge had been nearly completed that a front-end loader began burrowing under the deck to remove the supporting earth.

For the J. E. Latta Construction

Co., Inc., of St. Louis, this unorthodox method of bridge building paid off by cutting costs and speeding construction. By using the ground to support the deck, the contractor eliminated the need for expensive shoring and falsework piles. Since loaded trucks could roll in alongside the twin bridges at deck level, there was less need for cranes to handle materials. Much of the concrete was placed directly from ready-mix trucks. It also proved helpful to have work and storage areas alongside the bridge.

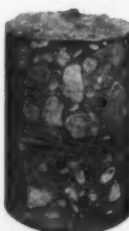
The method worked out so well that

This Thin Wall Bit
CAN EASILY MEAN
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Fast, easy drilling through hardest materials such as reinforced concrete, fused quartz, etc. make Hoffman Thin Wall Bits ideal for foundation sampling, drilling mounting holes or for conduit openings. They drill holes to exact size the first time . . . eliminate digging, chipping, forming . . . speed the work . . . save on extra materials and equipment. Surface Set or Impregnated . . . in standard O.D. sizes from 1" to 12" . . . Hoffman Thin Wall Core Bits assure true drilling accuracy and economy.

A Hoffman Bit cut right through the steel bars and heavy aggregate to produce this core from reinforced concrete.

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Write for illustrated copy of
Hoffman Bit Catalogue—FREE

HOFFMAN BROS. DRILLING CO.
Box 426 Punxsutawney, Penna.



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CONTRACTORS AND ENGINEERS



Men set pipe screeds to exact grade for one of the spans. Reinforcing steel is being set for the other bridge. Between the columns, center, is the depressed section that will be used to form the beam joining column tops.

The bridge begins to emerge from the earth. Excavation was started by a front-end loader. Scrapers moved in when the ground under the bridge was brought low enough to give them headroom.



J. E. Latta, president of the company, estimated the building time for the two bridges was cut by two months. As for the savings in dollars, the company does not wish to release any exact figures.

The idea for forming the deck on the ground originated within the Latta organization. After reading about a concrete dome that had been successfully formed on a mound of earth, company officials were convinced that the method could be applied to building a box-girder bridge.

To check out the calculations, and to convince the state highway department, the contractor poured a test slab at the bridge site. The slab, which approximated the weight of the box girders, was poured on a thin work slab that had been sprayed with a bond-breaking agent. After about a week, the top slab was lifted off the work slab, demonstrating the effectiveness of the bond-breaking agent. A check on elevations revealed that the ground had not settled under the load. Although the only real test would be in the building of the bridge, the progressive Missouri Highway Commission was willing to go along with Latta. And Latta was willing to gamble several hundred thousand dollars that the new method would work.

Bridge suited to new method

The location and design of the twin structures were ideally suited to the new method of construction. Each of the two bridges on the Mark Twain Expressway carries a 39-foot roadway over the circumferential interstate route west of St. Louis. Since the route is still in the planning stage, there was no existing roadway cut through beneath the bridges.

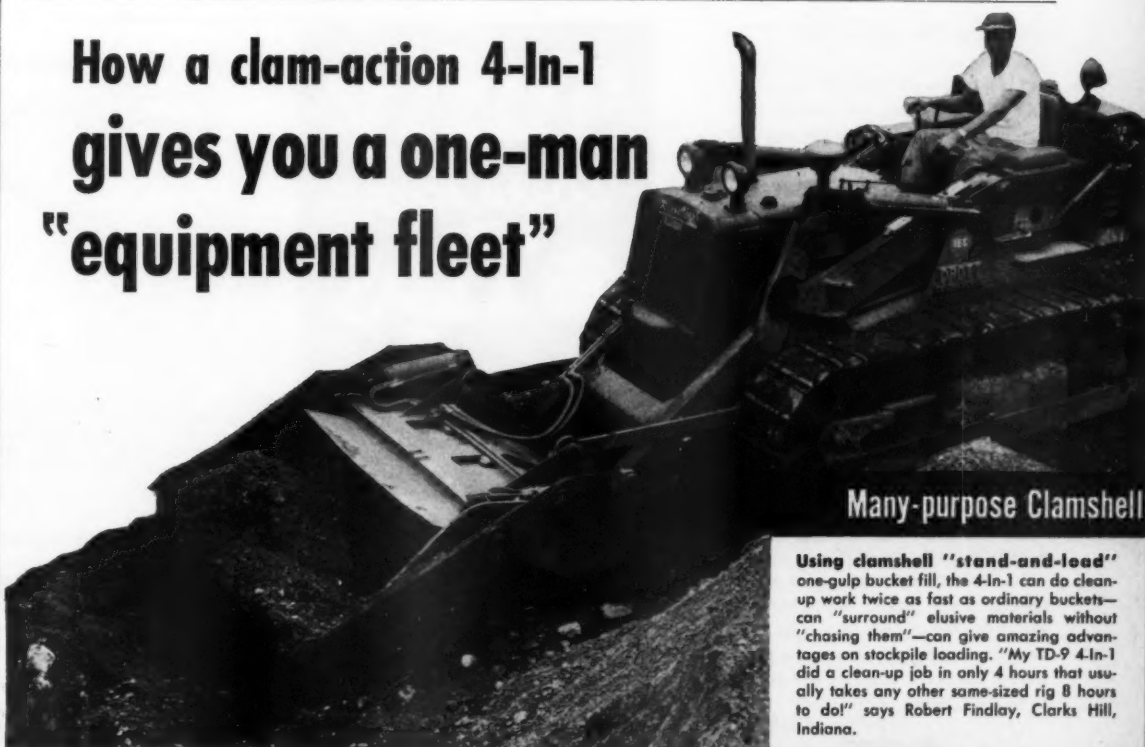
Each 252-foot-long structure contains two 77-foot central spans and two 49-foot spans connecting to the abutments. Each bent consists of two 3-foot-diameter columns resting on belled caissons. The bridges are 29 feet apart.

Grade and drain first

Since the natural ground was about 8 feet higher than the deck of the bridge would be, the first step in construction was to cut down the clay to about the level of the bottom of the bridge deck. Scrapers took out this

(Continued on next page)

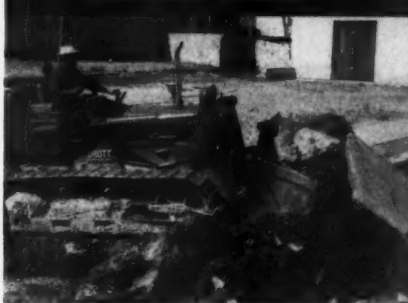
How a clam-action 4-In-1 gives you a one-man "equipment fleet"



Many-purpose Clamshell

Using clamshell "stand-and-load" one-gulp bucket fill, the 4-In-1 can do clean-up work twice as fast as ordinary buckets—can "surround" elusive materials without "chasing them"—can give amazing advantages on stockpile loading. "My TD-9 4-In-1 did a clean-up job in only 4 hours that usually takes any other same-sized rig 8 hours to do!" says Robert Findlay, Clarks Hill, Indiana.

Excavator-Loader



"Carry-type Scraper"



Earth-rolling Bulldozer



Skid-Shovel position applies the tremendous excavating force of pry-over-shoe break-out action—enables the International Drott 4-In-1 to "double" for power-shovel performance on a long list of jobs. This TD-9 4-In-1 is breaking up, digging up, and loading out old concrete walks and masonry curbs for Contractor Ralph Torres, El Paso, Texas.

As "carry-type scraper" this TD-9 4-In-1 gives inch-close lot-grading accuracy, spreads with precision. Close-coupled, this unit delivers its big capacity where "long hitched" outfits can't profitably maneuver. "The 4-In-1 gets me jobs an ordinary loader can't begin to do," states Owner Harold Swanson, Richmond, Calif. "My competitors are buying 4-In-1's to equal what I can do!"

Lift the clam lip hydraulically, and you've got earth-rolling bulldozer action, seconds-fast and fingertip easy. This TD-20 4-In-1 is doing all the excavating and rough grading for a new 6-acre factory. "I switched to the TD-20 outfit to get maximum volume as a one-man-operating contractor," reports Owner Albert George Gee, Cedar Rapids, Iowa.

Count the machines an International Drott 4-In-1 can replace for you—count the thousands of dollars it can save you—count the profitable jobs it can get you, competing with contractors who bid on the basis of using a yard full of limited-duty rigs. And measure the performance protection value of exclusive shock-swallowing Hydro-Spring. See your International Drott Distributor for a demonstration!

For more facts, use Request Card at page 18 and circle No. 261



International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

**INTERNATIONAL
DROTT**



Girder steel, supplied by Laclede Steel Co., is tied by workmen. Because of the unique method of construction, there is plenty of storage and work space between and alongside the bridges.

(Continued from preceding page)

dirt, as well as the material on either side of the bridges. Ground between the bridges was left at about deck level, while outside the bridges it was cut down to about the level of the roadway that would pass under the bridge.

Good drainage of the area on which the bridges would be built was important. To keep the ground from getting soggy, the contractor laid a tile drain in a gravel-filled trench between and at the ends of the two bridges.

Drill caissons

With the ground graded down to about the elevation of the bottom of the deck, Calweld bucket-type drill rigs were brought in to put down the 4-foot-diameter caissons.

The holes, which were belled at the bottom, were drilled down through about 40 feet of clay to a rock stratum. Steel cages were set in the lower part of the holes; concrete was poured to half the depth of the shaft.

Set columns

The 3-foot columns were conveniently formed and poured with the aid of Sonotube fiber forms. The tubes, slipped over the cages of reinforcing steel, were held in place at the bottom by a wood collar. The tops of the forms, at about ground level, were held by blocks. These were probably the first bridge columns ever to be poured directly from a ready-mix truck. After the columns were poured, sand was placed in the 6-inch gap between the Sonotube and the side of the hole.

Place work slab

With the columns in place, the next step was to fine-grade and roll the clay to a level of 2½ to 3 inches below the bottom of the bridge concrete. A Cat D4 and an Adams Motor Patrol handled the fine-grading. Compaction of the surface was done with a Gallion 10-ton tandem roller.

Considerable care had to be taken in placing the 2½-inch work slab, for its position controlled the elevation of the box girders and its surface affected the exposed concrete of the bridge bottom.

To control the surface of the con-

crete, crews set pipe screeds in lanes about 5 feet apart for the length of the span. Elevations of the top of the pipe were carefully checked with a level. The 2,000-pound concrete was poured from ready-mix trucks to form alternate lanes. The pipe screeds were removed, and workmen then floated the concrete and gave it a hand-trowel finish. The concrete was cured with Hunt Process Clear compound.

The surface of the work slab was crowned, the same as the riding surface of the bridge slab. The 6 to 8-inch-deep caps connecting the two columns in each bent were formed on the bottom with concrete and on the vertical sides with wood.

To prevent the bridge concrete from clinging to the work slab, crews

sprayed one coating of Hunt Process bond-breaking agent on the surface of the work slab. Additional spraying was done after the steel had been set to touch up areas where the coat had worn off.

The reinforcing steel, which was furnished by Laclede Steel Co., was set in the conventional manner. The layer of steel in the bottom deck rested on chairs placed on the work slab. When possible, concrete was poured directly from ready-mix trucks. Two cranes placed the concrete in areas the trucks could not reach.

After the bottom slab had been poured, wood forms were used to build the girders and the top slab. This was a conventional operation, but the ground surrounding the

Tuffy Wire Rope Tips

Guard Against These Killers!

... Get The Full Measure of Service-Life Built In By Wire Rope Specialists



Tuffy Balanced Scraper Rope

"Balanced" construction makes it flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Also gives higher resistance to the shock of load impact on slack line. Moves more yardage per foot because it's specially built to take the beating of drum-crushing abuse.

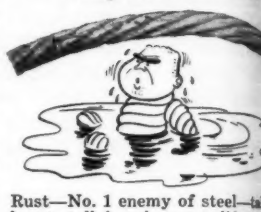


Mangled in a Wedge Socket



Here's a result of improper socketing. It was caused by using a poorly designed or worn-out wedge socket. Failure at the dead end can damage other sections of the rope, too.

Rusty Road to Ruin



Rust—No. 1 enemy of steel—takes heavy toll in wire rope life. An insidious, silent type of killer, it often does irreparable damage before it's even noticed. The one-strand break shown here resulted when the rope was allowed to become rusted through lack of lubrication. Tests show that, with other conditions ideal, properly lubricated rope has up to 10 times the life expectancy of dry rope.

Overloaded — Soon Exploded

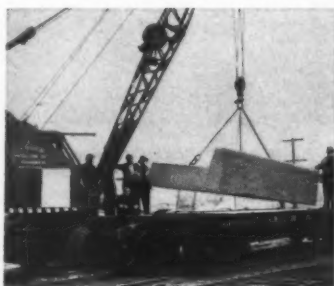


The rated capacity of a wire rope is based on the breaking strength (catalog) divided by a safety factor applicable to the type of service or use. The grade of steel, type of construction and size of the rope determine tensile strength. It must be properly related to the loads it will carry, or costly and dangerous early failures are likely to occur.

Victim of the Bends



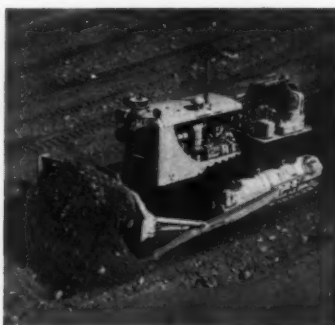
Excessive bending of wire rope accelerates wear. Generally, more flexible ropes are used as bending stresses increase (with decrease in tread diameter of sheave or drum). If a rope is operated on a sheave too small for its bending characteristics, early failure is certain. Through an exhaustive series of bending tests, Union Wire Rope engineers have compiled data that you can use to assure getting the rope construction that will give you the longest service life. Ask about it.



Tuffy Balanced Slings & Hoist Lines

"Balanced" because they combine strength, flexibility and toughness in the proper relationship to do a better job longer.

Tuffy Slings and Hoist Lines are a top-performing team in every type of materials handling. The slings are made of a patented, machine-braided fabric that's next to impossible to knot or kink. The hoist lines are a special construction in which strength, flexibility and toughness are balanced.



Tuffy Balanced Dozer Rope

Built to give you longer service with less downtime. Mounted on your dozer, a 150' reel of ½" or 9/16" can give you a big bonus of extra service. Here's how: when rope shows drum wear or is crushed on the drum, you feed through just enough to replace the damaged part. You save the 40 to 50 feet ordinarily thrown away. Also available in 300' and 500' reels.



Tuffy Balanced Dragline Rope

Here's highest abrasive resistance with super flexibility. Better spooling. Smoother riding on grooved drums. Tuffy Dragline Rope hugs the drum when under full load. Gives you longer life, consistent dependability, in handling material—wet or dry dirt, sand, gravel, cement or minerals.



Superintendent Clyde Fadler checks excavation under the spans. Sonotube forms were left in place to protect the columns during this part of the job.

bridge gave men an uncluttered place to work and made it possible for loaded trucks to roll in close to the bridge.

With the deck work nearing completion, highway engineers and the contractor were anxious to swing the bridge before frost had a chance to heave the ground. An International TD-14 front-end loader started the job of burrowing in under the spans, and Latta company officials breathed sighs of relief as the first section of a work slab dropped down to reveal a clean, smooth bridge bottom.

Protected from the falling concrete by a steel cage, the operator of the loader worked the ground under the bridge down to a level where scrapers could take over. During the excavation, the Sonotube forms were



L. G. Rice, vice president, and J. E. Latta (standing), president of J. E. Latta Construction Co., Inc., along with other key personnel, were responsible for developing the new method of construction.

left in place to protect the columns.

Personnel

Credit for the origin and development of the new method of bridge construction is shared by several key members of the Latta organization: J. E. Latta, president; L. G. Rice, vice president; W. C. Gusé, chief engineer; and Paul Kram, chief estimator. W. Barbour and Clyde Fadler were superintendents on the bridge.

The construction was supervised by the Kirkwood District of the Missouri State Highway Commission, which has R. A. Currie as district engineer. The resident engineer was Court Walter, and the inspectors on the bridge were Dick Morris and Paul Gutzler.

THE END

Crushed by a Tractor Cleat



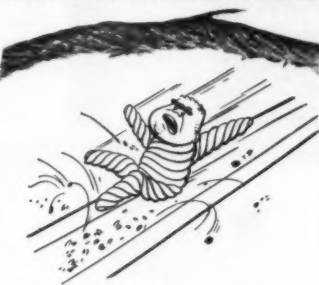
The Sunday punch for this piece of wire rope was delivered by a tractor cleat—just one of many crushing injuries caused by rope being run over or banged into by hard, sharp objects. Even the toughest wire rope has no match for this kind of mis-treatment.

After a Suicide Jump



This rope jumped out of sheave and was soon destroyed by pulling around the shaft. Actually it was a case of sudden slack which threw the rope out of the sheave.

Burned on a Frozen Sheave



End of the line came quickly for this rope as the result of operating over a sheave that did not turn. Note the exceptionally heavy abrasion on one side of the rope. Sheaves should be checked thoroughly and often.

"Real Gone" From Beatings on the Drum



Even under normal operating conditions, drum wear gives wire rope severe punishment. This wear concentrates at the cross-over points and at the flange. Excessive drum crushing results from operating on small drums, excessive loading and poor winding. Smooth drums are not recommended. Here are typical "drum beatings": Cross-over wear; cross-over crushing on drum; drum

crushing from poor winding; drum crushing from small drum.

Although drum wear cannot be eliminated, its effects can be greatly reduced. Under properly engineered procedures, two and three times the service can be obtained from the same line by improving drum conditions. Union Wire Rope Engineers will help you with this problem. Get in touch with us for information.

On the "Blink" from a Kink



This open kink resulted from mishandling of rope. Guard against kinks by proper winding on the drum. Never pull a loop smaller. Always enlarge it, then straighten out the rope.

Strangled by a Misfit Sheave



When the bearing surface of a sheave is too small for the rope diameter, pinching action quickly destroys the rope—especially when it's overloaded. The victim shown here was knocked out in just 1½ hours of service.

Why Wire Ropes are "Job Prescribed"—Each Designed for a Particular Type of Machine

There are thousands of wire rope constructions and Union Wire Rope specialists know them all. But, there is only one Tuffy line of wire ropes. Each Tuffy was developed and proved the one best rope for the particular work for which it is used. It is designed as a functional part of the type of machine on which it is used.

Why Wire Ropes are "job prescribed" and balanced in each prescription are the ingredients of strength, flexibility and toughness to give you genuine life from inefficient operation, foreshortened service life and safety hazards. Get longer service life and you cut down on your rope costs. Union Wire Rope Corporation, 2260 Manchester Avenue, Kansas City 26, Missouri.

Your Tuffy Distributor Can Help You Get The Full Measure of Service Life

UNION  Wire Rope

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Southwest Steel Products

For more facts, use Request Card at page 18 and circle No. 262

FEBRUARY, 1959

Night-visibility report available from the HRB

"Night Visibility, 1958," Highway Research Board Bulletin 191, contains reports on a color comparator for lights in the vicinity of traffic signals; optical properties of the atmosphere and highway lighting in fog; and experimental studies of night vision as a function of age and changes in illumination.

Also included in the bulletin are papers on night legibility distances of highway signs; efforts to improve visibility in fog; better headlighting; the relation between scotopic vision as measured by the night sight meter, daylight vision, and age; and vision at levels of night road illumination. The other topics cover a comparison of driver behavior on lighted and unlighted highways; lighting the Connecticut Turnpike; and field test of roadway lighting.

Priced at \$1.40, the bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Flintkote effects merger, acquisition

The Hankins Container Co., Cleveland, Ohio, has merged into the Flintkote Co., New York City, and Flintkote has purchased the assets and business of Orangeburg Mfg. Co., Inc., Orangeburg, N. Y. The merger will enable Flintkote to establish a nationwide container business, and the Orangeburg pipe-producing properties will permit Flintkote to expand its line of building and construction materials.

Both companies will operate as divisions of Flintkote. New members of the Flintkote board of directors are W. L. Davis, president of Hankins, and Hugh J. Robertson, president of Orangeburg.

Clayton moves Ohio plant

Clayton Mfg. Co., El Monte, Calif., has moved its Cincinnati, Ohio, headquarters into a new multipurpose facility at 3051 Exon Ave., Evendale, Cincinnati. The building will serve as a training school, a warehouse, a plant for manufacturing Clayton-Kerrick steam-cleaning compounds and a distribution center.

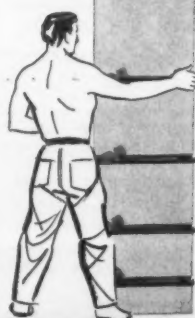


LOCATING ROCK and determining the quantity to be removed is the job of the Jet Probing Barge No. 1 on the Delaware Channel deepening job between Philadelphia, Pa., and Trenton, N. J. Built by the U. S. Army Corps of Engineers, it has three 37-foot towers riding rails on both sides of the barge. Each tower handles 58-foot-long probes.

How Simplex 10-Foot Forms Saved 25% on a Shopping Center Project

Like many contractors, a large Chicago-land firm* considered 10-foot forms too large and bulky for light commercial work and preferred to use various stacking methods. That was until the contractor discovered Simplex... the rugged, lightweight, 10-foot forms that helped him speed erection and lower costs on a recent shopping center project. The 90' x 44' x 12" foundation, required for the job, was set, poured, and stripped (in two stages) in just 72-man hours, employing 4 men. In spite of the 12" wall thickness and 10 foot height, no walers were used... just a few braces to prevent deflection and overcome wind conditions. All in all, the contractor reported a saving of over 25% in comparison with other forming methods on similar jobs. You, too, can make bids within reason and still make savings that turn into profit!

*Name on Request.

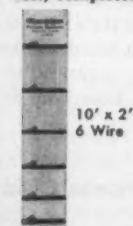


Shopping Center project in which Simplex Forms "set with ease," and the finished foundation was a "perfect wall" — straight, accurate, and smooth... as reported by the Chicago contractor.

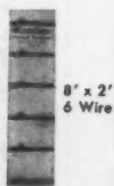
A FORM FOR EVERY PURPOSE PLUS A COMPLETE LINE OF ACCESSORIES

Easiest to Set-Up and Strip... No Loose Hardware

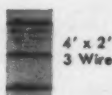
- 1 1/4" Plastic Impregnated Plywood with thick outer plys that will not peel. Forms have been used over 200 times and still pour a smooth wall.
- All hardware firmly bolted to panels... means no on-the-job assembly. Exclusive, cam action locking levers draw panels tight... minimize seam marks and insure accuracy.
- Panels are lightweight. Full 2' x 10' panel weighs less than 100 lbs., completely fitted with six backing bars and locking levers.



Rugged, heavy-duty forms for 9' and 10' commercial foundations. Easy to handle in spite of their size.



Highly adaptable for alternate stacking with 4' forms on 12' and higher walls. Weighs about 78 lbs.



Ideal for slab foundations or for alternate stacking with 8' forms. Weighs only 39 lbs.



WRITE TODAY FOR ALL THE FACTS!
SIMPLEX FORMS SYSTEM, INC.
5611 Industrial Ave.
Rockford, Illinois

For more facts, use Request Card at page 18 and circle No. 263

Basics of compaction in booklet from Gallion

Designed for those who have had no previous opportunity to study the subject of soils and materials compaction, especially in connection with the construction of roads, streets, airstrips, earthworks, dams, and other projects, a booklet entitled "The Use and Application of Compaction Equipment" is offered by The Gallion Iron Works & Mfg. Co.

The booklet, written in nontechnical language and an easy-to-read

style, begins with a history of compaction of materials in construction and covers the use and application of the various types of compaction machinery available today. Photographs and drawings illustrate the text, and a comprehensive glossary of construction terms is included.

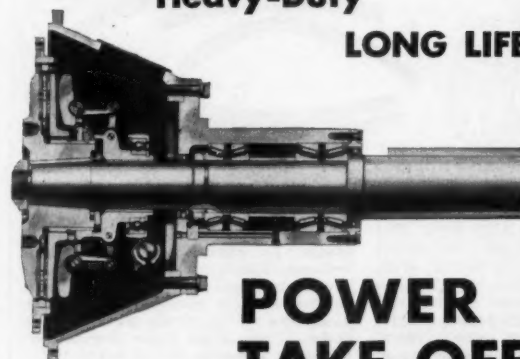
Write to The Gallion Iron Works & Mfg. Co., Dept. C&E, Gallion, Ohio or use the Request Card at page 18 Circle No. 38.

ROCKFORD

OIL FIELD TYPE

Heavy-Duty

LONG LIFE



POWER TAKE-OFF

Provides

THESE EXCLUSIVE ADVANTAGES

Designed to meet the needs of Oil Field and other rugged service—this ROCKFORD Extra Heavy-Duty POWER TAKE-OFF

- Eliminates the Pilot Bearing
- Release and Main Bearings are lubricated for one year
- Main Bearings are 40,000 hour type
- Handles 5,000 pound Belt Loads
- Out-Board Bearings and Flexible Couplings eliminated
- Furnished with Single or Double Plate, Organic or Morlife® faced Gear tooth Type Clutches

SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER

314 Catherine St., Rockford, Ill., U.S.A.
Export Sales Borg-Warner International — 38 So. Wabash, Chicago 3, Ill.

CLUTCHES

For more facts, use Request Card at page 18 and circle No. 264

CONTRACTORS AND ENGINEERS

GMC

goes "full speed ahead" with

OPERATION "HIGH GEAR"

GMC pours on the power in the biggest engineering,
design and quality-control program the industry has ever
known... bringing you trucks unmatched for their rugged
reliability and economical performance!

The biggest things in trucks today are happening at GMC!

Without fanfare, GMC has embarked on a giant engineering, design and quality-control program... Operation "High Gear".

You sense its impact everywhere you turn.

You find it in the alertness and feeling of pride all along the assembly line... and in the close teamwork between engineering, manufacturing, sales and service.

You see it in the great new choice of GMC trucks... the complete selection of pickups, six-wheelers, tractors, dumps—in fact, a size

and type for your every construction need.

You discover it in every truck built by GMC... in the extra-rugged *all-truck* quality that spells new reliability and long life... in the advances in engines, transmissions, axles and frames that mean new operating economies.

The biggest forward surge of its kind in trucking history, Operation "High Gear" is backed by the keenest brains and manufacturing know-how in the business. And, it's gaining speed with every passing day! GMC Truck & Coach—a General Motors Division.

Turn the page and see how Operation "High Gear" can pay off for you!

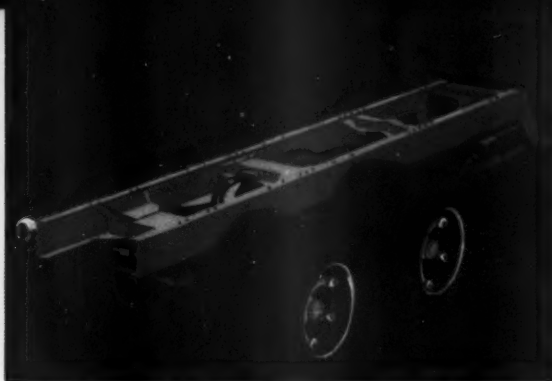


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Light-duty GMC's are truck-built, too! A quick comparison will convince you there's no pickup for rugged construction work like GMC! Test the tailgate with one end unhooked. Two men can't make it sag. Check the front crossmember—same as on bigger GMC's. Note GMC's big-displacement truck engine.



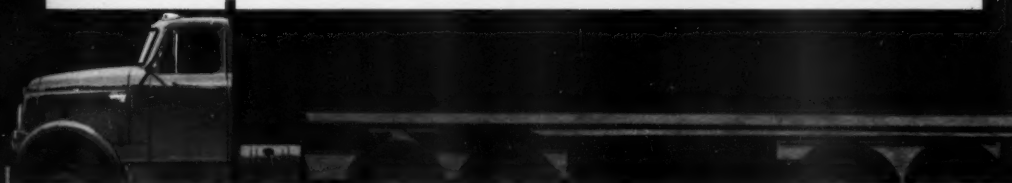
Rugged reinforced frames give GMC's backbone! GMC frames are built with *extra* brawn to withstand the shocks, twisting and stresses of heavy hauling over rough terrain. Where required, heat-treated frames and strategic reinforcing are used to give added strength without extra weight.

GMC OPERATION “HIGH GEAR”

brings you the world's most advanced trucks for on- and off-road construction . . . from truck-built ½-ton pickups to giant 90,000 GCW workhorses!

ECONOMICAL DIESEL POWER FOR ANY CONSTRUCTION JOB!

ENGINE MODEL	GMC 4-71	GMC 6-71SE*	
Gross HP at RPM	152 at 2300	189 at 1800	210 at 2100
Net HP at RPM	136 at 2300	175 at 1800	192 at 2100
Gross Torque at RPM	374 at 15-1600	577 at 1200	577 at 1200
Net Torque at RPM	344 at 13-1500	553 at 1200	553 at 1200



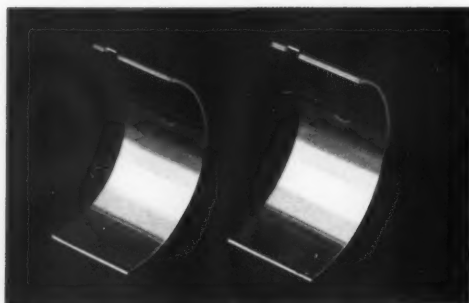
*Two power outputs shown reflect governor settings. Also available on request, full-power 6-71 developing 235 H.P.

GMC Two-Cycle Diesels combine power and economy. GMC 4- or 6-cylinder diesels are *two-cycle* engines. They pack more power per cubic inch and more power per pound of engine weight, at lower RPM's. *Four* exhaust valves per

cylinder (not just one or two) plus GMC's precision fuel injectors give greater economy and efficiency. And, remember, in a GMC both engine and power train are *tailor-made for each other!*



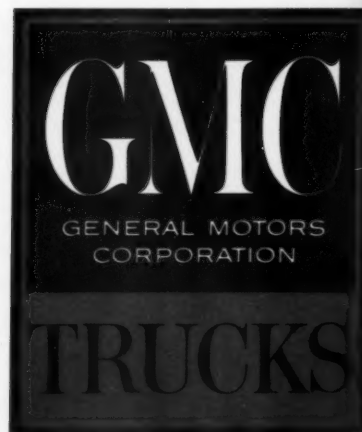
Synchromesh transmissions standard on all construction trucks! No double-clutching, grinding gears or extra cost with synchromesh. GMC's smooth Hydra-Matic transmission and new Torqmatic automatic transmission with built-in hydraulic retarder for heavier trucks —available at extra cost.



Extra quality makes GMC engines last! M-400 bearings with 7 times the wear of conventional bearings . . . drilled oil passages in connecting rods . . . only two of more than 40 extra quality features standard on GMC's!

Biggest choice of chassis and components in the industry! You name it, GMC's got it! From the smallest pickup to the largest tractor, GMC can tailor-make the truck to fit your job. From its wide selection of cabs, engines, transmissions, frames, axles and wheels GMC can now offer you practically any truck combination you require — all thoroughly tested and proved for reliability and long life.

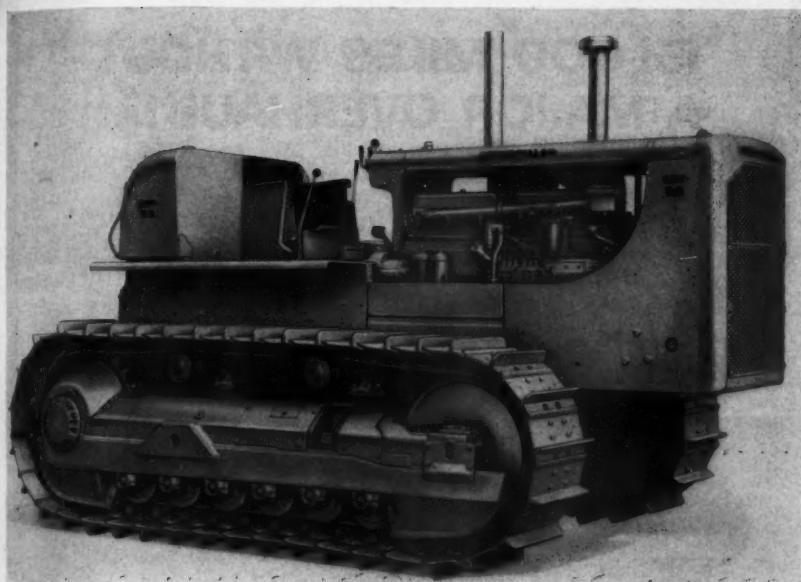
From ½-ton to 45-ton . . .
General Motors leads the way!



PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

Features of two new tractors include increased weight, horsepower



Two new D8 tractors, both possessing increased weight, horsepower, and productive ability over their predecessors, are announced by the Caterpillar Tractor Co. The new machines are the Series H D8 direct-drive and torque-converter tractors.

Weight of the new direct-drive unit is 47,102 pounds, an increase of 4,377 pounds over the previous model. In torque-converter models, the 47,875-pound weight of the Series H D8 is 4,480 pounds greater than that of the old machine. Dimensionally, these units are 9 inches longer and 5 inches higher.

Flywheel horsepower of the new units has been increased to 225 from the previous 191, an increase of 18 per cent. Drawbar horsepower on the direct-drive model is 180, increased from 155. Torque rise of the engine has been increased by 20 per cent.

The transmission on the direct-drive model is directly reversing in all 6 speeds. Top reverse speed is nearly double that available on the previous direct-drive model. In addition, the high forward speed has been increased to 6.3 from 5.2 mph.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 102.

Front-end loader carries up to 3,000 pounds, has buckets to 2 yards

The rear-wheel-drive, front-wheel-steer Payloader Model H-30R, designed to replace the Model HF, is announced by The Frank G. Hough Co.

The new machine has a carry capacity of 3,000 pounds at average operating speeds and offers buckets from $\frac{1}{2}$ yard to 2 cubic yards. According to the manufacturer, the bucket action of the H-30R provides a full 40 degrees of tipback, enabling the operator to obtain larger loads than were possible with the old HF model.

This Payloader has a new torque converter with a 2.6:1 stall ratio, as well as a 4-speed full-reversing, manually shifted transmission. It is powered by a Hercules 6-cylinder gasoline engine developing 66.5 horsepower at 2,200 rpm.

Among the numerous attachments available for the H-30R are the ram sweeper; Wain-Roy rear-mounted backhoe; ram leaf loader; backfiller blade; lift fork; crane hook; rotary, V-blade, or reversible-blade snowplows; and cabs.

Optional equipment includes double-acting cylinders for down pressure, steering-booster attachment, and special buckets.

For further information write to The Frank G. Hough Co., Dept. C&E, 762 Seventh Ave., Libertyville, Ill., or use the Request Card at page 18. Circle No. 95.





On the Model SP-54B, the ballast range can be varied to provide from 3 to 10 tons compaction load. Low-silhouette body design increases visibility for the operator.

Offer new self-propelled pneumatic-tire roller

An improved medium-weight self-propelled pneumatic-tire roller is offered by Bros, Inc.

Designated Model SP-54B, the machine features a ballast range that can be varied to produce from 3 to 10 tons compaction load. A lower center of gravity increases the machine's stability for shoulder work and steep grades. Full machine height to top of steering wheel is 91 inches.

Improved power hydraulic steering and hydraulic reversing clutch and transmission provide ease of operation and handling for shuttle or back-and-forth rolling. The unit has a speed range from 0 to 20 mph.

Gross engine rating of the SP-54B is 73 horsepower.

For further information write to the Road Machinery Division, Bros, Inc., Dept. C&E, 1057 Tenth Ave. S. E., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 36.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

Heavy-duty steam cleaner is fully automatic

A heavy-duty steam cleaner, said to be fully automatic and designed for one-man operation, is announced by the Circo Equipment Co.

Fully protected controls regulate hot-water proportions to insure proper dissolving of the cleaning compound. The solution, fed into the steam stream in the desired strength, emerges from the gun as a super-saturated steam jet. Valves control the steam entry through the heating coils, guarding against partial clogging or possible complete obstruction. The compound does not pass through the coils.

The unit is available in two capacities: Model 275, 110 volts, 1½ horsepower; and the Model 360, 220 volts, 3 horsepower. Fuel capacity of both units is 15 gallons.

For further information write to the Circo Equipment Co., Dept. C&E, 51 Terminal Ave., Clark, N. J., or use the Request Card at page 18. Circle No. 47.

Forged sheave block is easy to open

Forged alloy steel construction of all major parts except the wheel and a new opening mechanism are major features of a new line of sheave blocks offered by the Joy Mfg. Co.

The forged parts not only provide ruggedness to prevent shattering, cracking, and springing of side plates, but also are a safety feature, according to Joy. Under extreme overloads, the hook will not snap off, but when overloaded at three times rated capacity it will begin to straighten, and

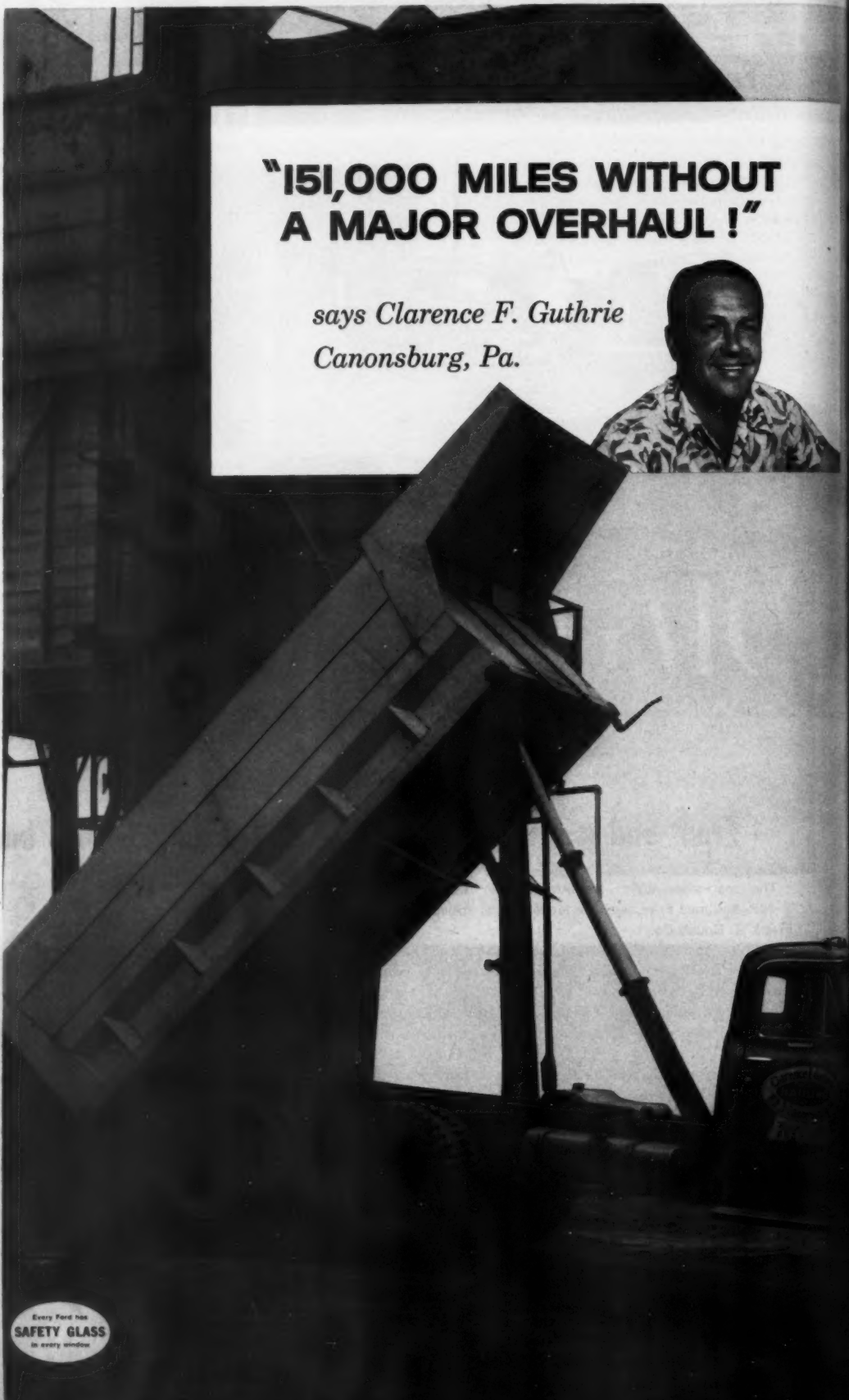
conditions can then be remedied. The block is opened simply by turning the hook 90 degrees and pushing it aside.

The block is available in 6, 8, and 10-inch sizes with choice of swivel hook, safety swivel hook, clevis, or clevis, or swivel eyebolt, and open or fully shrouded side plates.

For further information write to the Joy Mfg. Co., Dept. C&E, Circle Bldg., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 61.

"151,000 MILES WITHOUT A MAJOR OVERHAUL!"

says Clarence F. Guthrie
Canonsburg, Pa.



Every Ford has
SAFETY GLASS
in every window

The new Haulette features load capacities up to approximately 16,000 pounds. A triple-axle unit, it has a length of 18 feet.

New triple-axle trailer has bigger load capacity

The Haulette Division of the Fayette Mfg. Co. announces a new heavier-duty triple-axle trailer.

The Haulette Model 12001-3 weighs 2,600 pounds. Its over-all length, with the 3-foot 9-inch double folding ramps up, is 18 feet; effective bed of the trailer is 12 feet long with a width of 6 feet 6 inches.

All-steel construction is a feature, as well as the firm's equalizer-bar de-

sign and individually spring-mounted wheels for even, level towing.

Depending on the tires specified, the unit has load capacities to about 16,000 pounds.

For further information write to the Haulette Division, Fayette Mfg. Co., Dept. C&E, Morenci, Mich., or use the Request Card that is bound in at page 18 of this issue. Circle No. 31.



"Ford's 332-cu. in. V-8 is the hottest thing on the road for its size!"

"Our fourteen Ford trucks all have exceptional durability records. Several '55 T-800 dumps, grossing 48,000 lb., have over 200,000 miles on 'em. They went an average of 150,000 miles before we touched the engine. And for power and performance, too, the Ford 332 engine is the hottest thing on the road for its size.

"Ford's better visibility, handling ease and power steering are big factors in our excellent highway safety record. We've had many million-mile accident-free years with our Ford fleet.

"In addition to our sand and gravel business, we have ten Ford F- and C-800 tractors that make long, over-the-road trips hauling limestone one way and steel on the way back.

"On these trips parts availability is very important. Ford Dealers are about everywhere, and they all stock parts. We never get delayed waiting for Ford parts."

Go FORD-ward for savings with '59 Ford Trucks!

Whatever your job . . . wherever you do it—you'll find Ford Heavies and Extra Heavies are engineered and built to do it better! And the '59 improvements in these models will bring still more benefits to your operation.

Greater operating economy with new, faster rear axle ratios and wider choice of transmissions.

Higher payloads and longer axle life with new, higher-capacity front and rear axle options for most models.

Factory installed tractor package custom-fitted to Ford trucks for safer, more dependable braking.

More efficient parking brake of the internal expanding type has approximately 50% greater stopping and holding ability, requires less than half the operating effort needed for the previously used type.

Yes, the new '59 Ford trucks are here to take you Ford-ward for savings, Ford-ward for modern style and stamina.

See your Ford Dealer today!



NEW '59 FORD F-600 DUMP carries a maximum GVW rating of 19,500 lb. Now available with optional 6000-lb. front axle for greater capacity, longer life.

FORD TRUCKS COST LESS

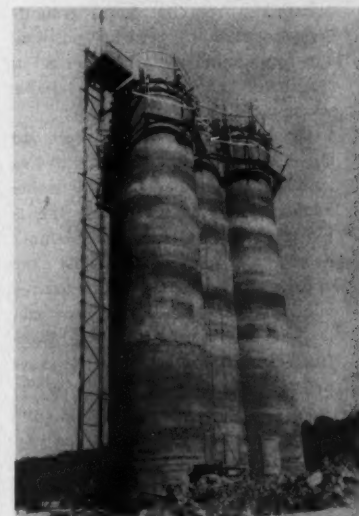
LESS TO OWN...LESS TO RUN...LAST LONGER, TOO!

New hoisting machine requires no operator

A remote-control automatic hoisting machine is available from the Buck Equipment Corp.

At the touch of a button, loads up to 2,500 pounds can be raised or lowered at a rate of 160 fpm, and delivered to the exact height desired.

According to the manufacturer, the



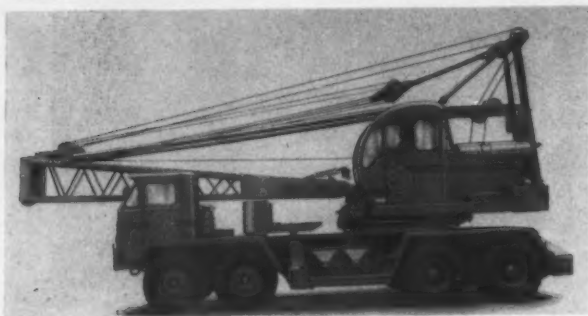
Shown here in the erection of three tall storage silos, the Buck HoisTower features remote-control operation. At the touch of a button, loads up to 2,500 pounds can be raised or lowered at a rate of 160 fpm.

HoisTower can be operated by remote control by workers at all floors or on the ground. Built-in safety cutoffs provide that the platform cannot overrun the limits of the tower or drop at excessive speeds. Also, the unit can be preset to deliver a load to a particular height.

Powered by a Wisconsin 25-hp engine, the HoisTower is electrically actuated and controlled through its own self-contained 12-volt dc power supply system. It is self-erecting to a working height of 45 feet, and can be erected to a greater height by adding tower sections. The unit is trailer or truck-mounted for rapid transportation to and around the building site.

In case of electrical or mechanical failure or slack cable, the HoisTower stops automatically.

For further information write to the Buck Equipment Corp., Dept. C&E, 720-X Anderson Ferry Road, Cincinnati 38, Ohio, or use the Request Card at page 18. Circle No. 30.



Standard power installations on the Model 360T's upper machinery are either a Chrysler V-8 gasoline engine with torque converter or a GM diesel, also with torque converter.

New 8 x 4 truck crane lifts up to 40 tons

The Unit Crane & Shovel Corp.'s Model 360T 8x4 truck crane is designed to handle safe load lifts up to 40 tons with a 40-foot boom.

The 360T is said to be capable of picking up 120 feet of boom, without assistance, from horizontal ground-level position to operating position. Pin-connected jib attachments in lengths of 15 to 30 feet are available when extra reach is necessary.

For stripping the machine for road travel, a boom adapter is provided as standard equipment. This boom adapter has built-in sheaves and is pin-connected to the end of the inner boom section, thus allowing the crane's own hook block to lift the removable counterweight, pin-type outriggers, and other component parts from the chassis to reduce the gross weight.

A winch-operated retractable gantry can be raised to working position or lowered for highway travel.

For further information write to the Unit Crane & Shovel Corp., Dept. C&E, 6411 W. Burnham St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 21.

Two new asphalt plants for medium, small jobs

Two Hub asphalt mixers, a 15-tph plant and a 25-tph plant, are available from the Research Equipment Co., Inc.

Designed for street and highway departments and for the contractor who specializes in medium and small jobs, as well as in patching and repaving, the mixers can work with regular asphalt cement and cutbacks. Dust-free and ground-level operating, they can be electric, gas, or diesel-driven.

Both units are designed for stationary operation; the wheel assembly is optional and intended only for transportation.

According to the manufacturer, cold-mix can be produced at a rate from 30 to 50 tph.

For further information write to the Research Equipment Co., Inc. Dept. C&E, 3 Sidney St., Greenville, S. C., or use the Request Card that is bound in at page 18 of this issue. Circle No. 54.

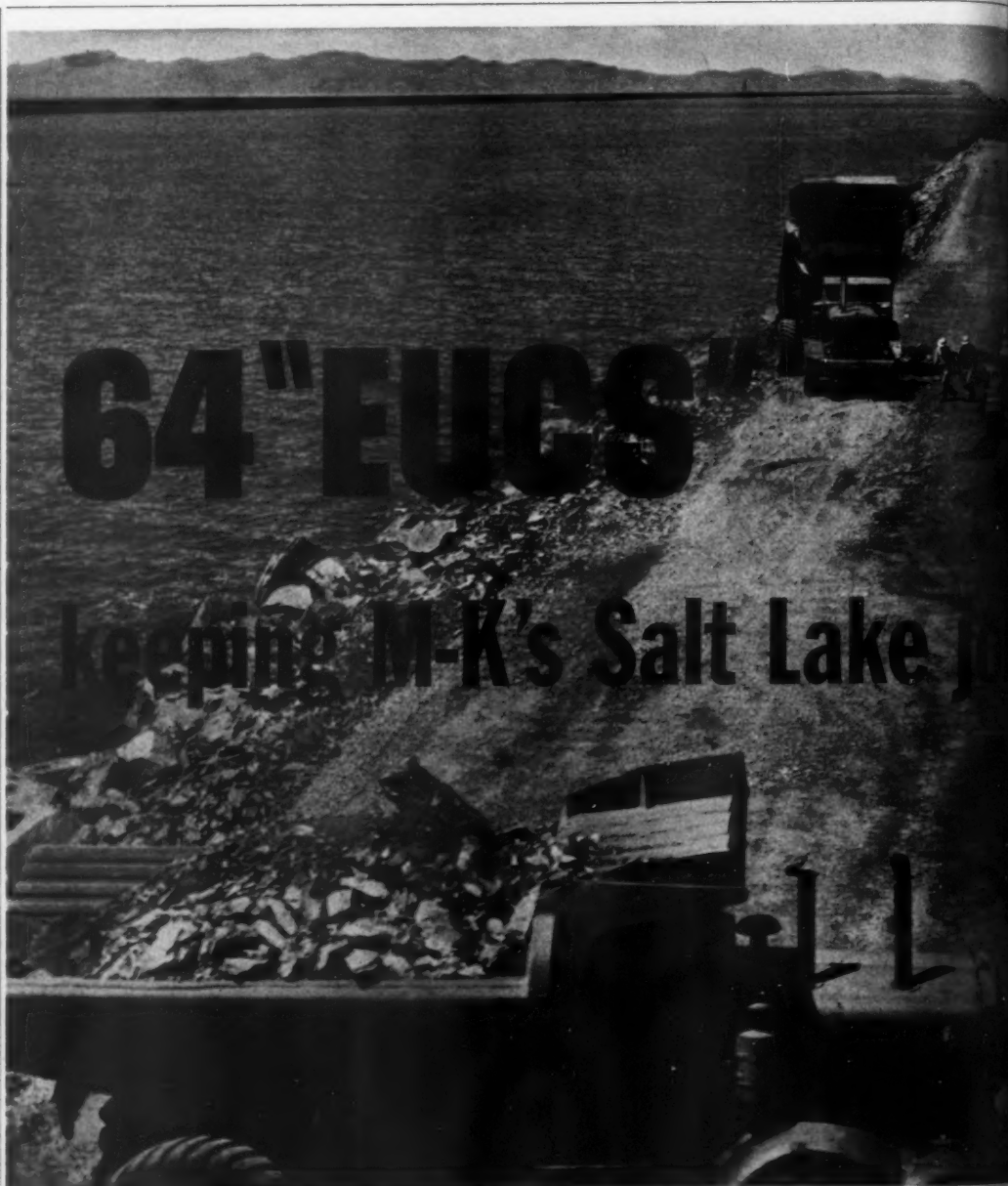
Redesigned pipe detector offers greater accuracy

The newly designed circuit and internal construction of the Detectron pipe detector, manufactured by the Computer-Measurements Corp., is said to have substantially improved its efficiency.

A signal of much sharper cutoff more accurately determines the exact number of pipes that may lie in the path of the bulldozer or ditching machine.

The new circuit provides a more stable field signal, reducing the possibility of false signals frequently caused by static and minor changes in the mineral content of the soil, the manufacturer reports.

For further information write to the Computer-Measurements Corp., Dept. C&E, Dept. 68A, 5528 Vineyard Ave., North Hollywood, Calif., or use the card at page 18. Circle No. 22.



Travel a total of 20,000 miles a day!

Construction of the 12.6 mile causeway across Great Salt Lake in Utah for the Southern Pacific Railroad is one of the most unusual projects in earthmoving history. An estimated total of 36 million yds. of rock, sand and gravel is being placed in a foundation trench dug into the lake bottom to provide stability for the fill. Morrison-Knudsen Co., Inc. is using barges, trucks and rail cars on a 'round the clock, seven days a week schedule and has placed as much as 2,400,000 yds. on the fill in a single month.

There are 46 Rear-Dump "Eucls" of 22-ton rated

payload capacity and 18 big Bottom-Dumps. The fleet rolls up a combined total of 20,000 miles a day—some round trip hauls are 23 miles in length.

As of the end of August, 1958, the "Eucls" had recorded a total of 295,618 operating hours. The 25 yd. Bottom-Dumps hauled over 38 million tons of gravel—nearly 10½ million yds. of rock and gravel were moved by the Rear-Dumps. It takes dependable, rugged equipment to maintain high production day after day—that's why leading contractors like M-K count on Euclid equipment for low costs and the best return on their investment.

Airplane takes off, lands in minimum space

The Heli Aircraft Corp. announces a new high-speed, long-range 5-place plane, the 295-hp Super Courier, with characteristics considered to be especially useful for construction companies with far-flung operations.

According to the manufacturer, the plane can take off and land over a 50-foot barrier in less than 500 feet with zero wind. It cruises at 170 mph,

yet can fly as slowly as 30 mph.

Power is supplied by a Lycoming 295-hp geared engine with a 3-blade, 96-inch-diameter Hartzel constant-speed propeller.

For further information write to the Heli Aircraft Corp., Dept. C&E, 230 Park Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 14.



The Super Courier cruises at 170 mph and can fly as slowly as 30 mph. Powered by a Lycoming 295-hp engine, the plane can climb at the rate of 1,550 fpm.

New, improved trencher digs to 8-inch widths

The Arps Corp. announces a new, improved, one-man-operated trencher—the Trench-Devil Model M-A.

The unit may be transported for short distances under its own power at 2 3/4 mph. For long-distance moving, it can be easily skid-loaded on pickup trucks or small trailers.

Digging widths are 2 3/4, 3 1/2, 4, 6, and 8 inches, up to 54 inches deep.



Self-propelled, the Trench-Devil Model M-A is easily operated by one man. Digging widths range from 2 3/4 to 8 inches, and digging speed is variable from 0 to 1,200 feet per hour in either direction.

Digging speed is variable from 0 to 1,200 feet per hour in either direction. At the 2-foot depth, digging speed is said to average 250 feet per hour with an 8-inch width; a 4-foot depth produces 200 feet per hour at a 4-inch width.

The hydraulic drive permits instantaneous reversal of direction while digging, making it possible to dig vertically alongside a wall.

New features of the M-A include a reversible rubber-belted conveyor to deposit the dirt to either the left or right side of the trench; a hydraulic-power boom lift; and an indicator on the front end for following guide lines when digging foundation trenches.

Optional rear dual wheels provide extra traction and flotation in muddy soils.

For further information write to the Arps Corp., Dept. C&E, New Holstein, Wis., or use the Request Card that is bound in at page 18. Circle No. 10.

←For more facts, circle No. 267

Loaded by 8 yd. shovels, the Bottom-Dump fleet hauls 30 yd. loads to drive-over hoppers at the start of a two mile conveyor system that loads the big barges.



of schedule

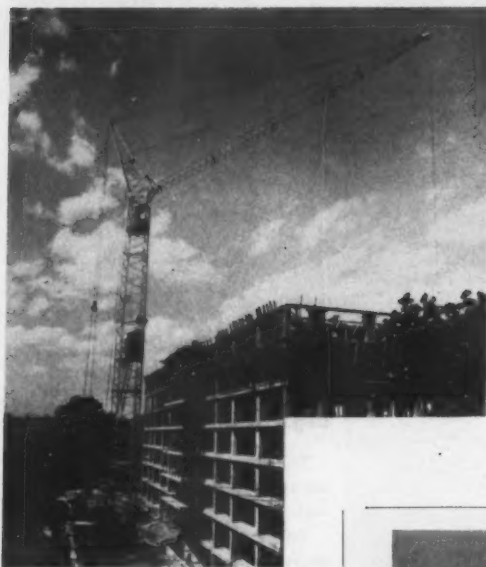


Finished causeway will project 17 feet above the lake surface—"Euclid" top out the fill after barges have raised it above water.

See your Euclid dealer for information and performance data on the complete line of "Euclid" Scrapers, Rear-Dump and Bottom-Dump Haulers and the world's most powerful crawler tractor—there's a size and type to match your needs.



EUCLID
Division of General Motors
Cleveland 17, Ohio



This 266-foot slewing tower crane travels on railroad tracks along the building site, placing materials at any desired point by means of an extremely long jib attached to the tower. All motions—hoisting, jibbing, swinging, and traveling—can be carried out simultaneously and under full load. It is operated either from manual controls located at the crane base and in two operator cabins in the tower, or by remote control enabling the operator to have complete visibility of the working area at all stages of the job. According to the company, the crane erects itself under its own power and, once assembled, will never have to be dismantled. It can easily be transported from job to job with only one truck. The unit shown is the Type 921, featuring a maximum radius of 98 feet 3 inches, and a maximum capacity of 9,750 pounds. Six other models are also available. For further information write to the American Pecca Corp., Dept. C&E, Federal Savings Bldg., White Plains, N. Y., or use the Request Card at page 18. Circle No. 73.

Fork-lift attachment offered for wheel tractor

A fork-lift attachment is available for Napco's 4-wheel-drive, 4-wheel-steer Crab tractor.

Called Crablift, the unit has a lifting capacity of 2,500 pounds to the maximum height of 21½ feet.

Installation of the Crablift does not interfere with the operation of rear-mounted equipment such as a backhoe attachment, the manufacturer claims.

For further information write to Napco Industries, Inc., Dept. C&E, 100 N. Seventh St., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 42.

Concrete-curing blanket is lightweight, re-usable

A Fiberglass concrete-curing blanket, to protect curing concrete from inclement weather and freezing temperatures, is announced by the Owens-Corning Fiberglass Corp. It is a fine-fibred, resilient, feltlike blanket of fibrous glass bonded with a thermo-setting resin, completely enclosed in an 8-mil black polyethylene film.

The blanket is said to allow relatively little water loss and temperature variations during the curing period and is specifically designed for repeated use after rough service. Any rips or tears can be easily repaired with pressure-sensitive polyethylene tape.

Fiberglass concrete-curing blanket is available in two thicknesses, the standard 1-inch and the heavy-duty 2-inch, in a width of 72 inches and a length of 50 feet.

For further information write to the Owens-Corning Fiberglass Corp., Dept. C&E, First National Bldg., Toledo 1, Ohio, or use the Request Card at page 18. Circle No. 65.

Commode for field use incinerate electrically

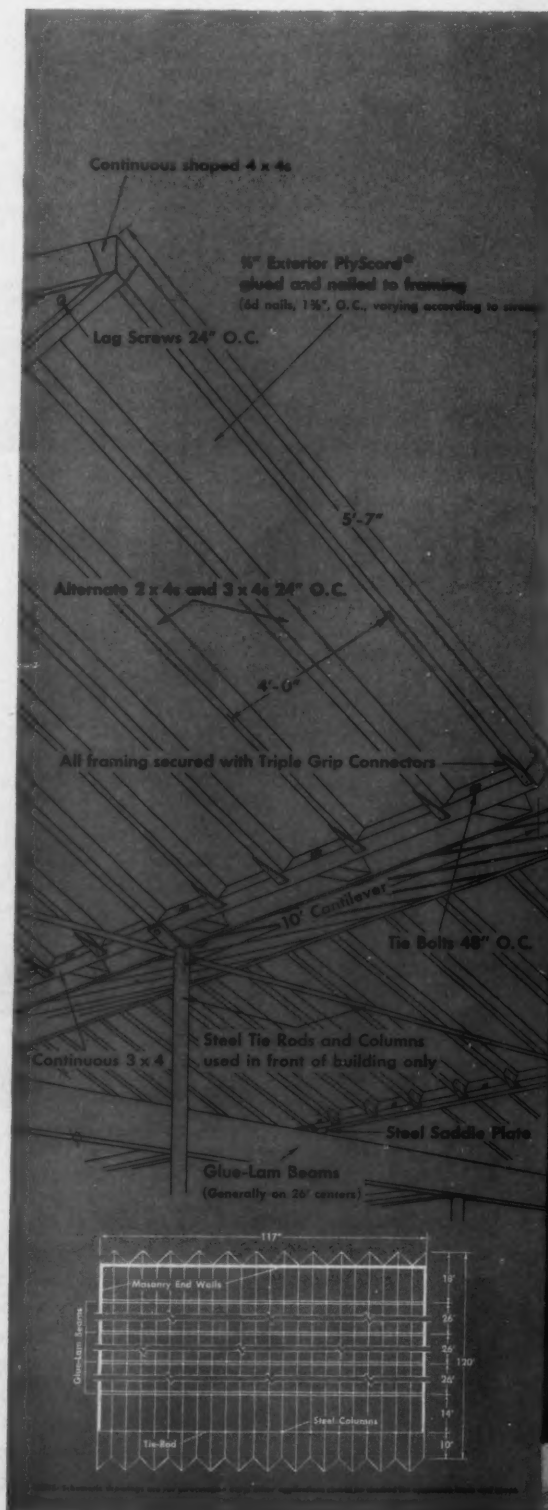
An electric incinerating commode, designed to solve the problem of human waste disposal in the field, is offered by Incinomode, Inc.

These units can be installed anywhere without connections to utilities such as water and sewers. They require no water, only 3 square feet of floor space, a vent to fresh air, and a source of electrical power.

According to the manufacturer, through the application of heat the waste is reduced to an ash comparable to cigarette ash quickly, quietly, and without odor. The Incinomode will operate from any of the voltages commercially available. Power requirements range from 2,000 watts.

For further information write to Incinomode, Inc., Dept. C&E, P. O. Box 481, Garland, Texas, or use the card at page 18. Circle No. 13.

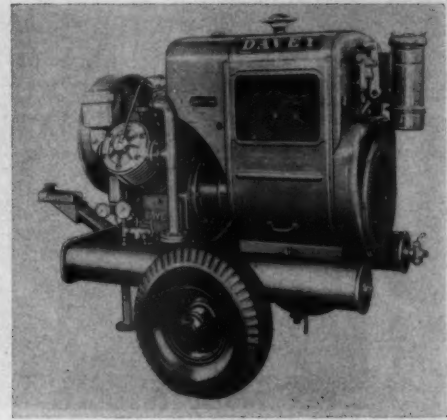
New low-cost cover 4



YEAKEL-POWELL BUILDING
LOCATION: Burien, Wash.
ARCHITECT: Jack N. Bryant, A.I.A.
STRUCTURAL ENGINEER: Harvey H. Johnson
CONTRACTOR: Powell Construction Co.



A new scraper combination, rated at 38 cubic yards struck and 48 cubic yards heaped, is offered by the M-R-S Mfg. Co. The firm's Model 250 600-hp tractor reportedly can tow the hydraulic-powered Model 250HW scraper at speeds up to 34 mph. Tractor features include an air-assisted clutch, and a semiautomatic constant-mesh transmission offering nine forward and two reverse speeds. For further information write to the M-R-S Mfg. Co., Dept. C&E, Flora, Miss., or use the Request Card at page 18. Circle No. 4.



Portable air compressor is lightweight unit

A lightweight, portable 75-cfm air compressor is announced by the Davey Compressor Co.

Known as the Davey Super Chief, the new unit is of the 3-cylinder air-cooled type.

Its features include an automatic centrifugal clutch, which disengages the compressor when the engine is cranked and facilitates starting. A built-in unloader system automatically maintains any predetermined air pressure up to 100 pounds. The manufacturer states that the unit will operate efficiently in a temperature range from 65 degrees below zero to 135 above.

The Super Chief reportedly can be towed behind a truck at speeds up to 50 mph.

The Super Chief is 72 inches long, 48 inches wide, and 52 inches high. Net weight is 1,250 pounds.

For further information write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 130.

Concrete welding agent joins fresh wet to cured

Uniweld, a new structural welding agent for joining fresh wet concrete to cured concrete, is announced by the Permagile Corp. of America.

An alloy of epoxy and nylon-type synthetic resins, which forms a permanent joint and water and vapor barrier, Uniweld is said to literally weld the entire contact area without any mechanical interlocking. According to the manufacturer, the bond is many times stronger and tougher than even fully hardened concrete. It also provides adhesion to brick, stone, cinder block, gypsum block, and other commonly used building materials.

For further information write to the Permagile Corp. of America, Dept. C&E, 34-43 56th St., Woodside 77, N. Y., or use the Request Card at page 18. Circle No. 7.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the Request Card at page 18.

cost fir plywood folded plate roof over 4,000 sq. ft. in only 9 hours

abricated on the job with common labor, new roofing system costs 10-20% less than conventional construction—provides attractive appearance, superior structural values.

THIS PRECISELY ENGINEERED folded plate roof—the first of its kind using lumber-framed plywood sections in series—offers several unique advantages:

Low cost and fast job-site assembly using common labor. Plywood components were installed by a 6-man crew in less than nine hours. Total costs, including all labor and materials, came to less than 80c per square foot—a figure some 10 to 20 percent less, locally, than joist or truss construction accomplishing the same clear floor area.

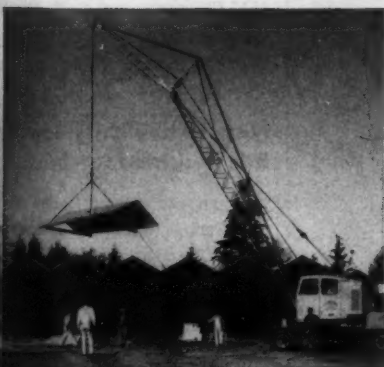
Structural simplicity. The roof consists of 11 plywood folded plates which rest on four glue-lam beams.

Each of the inclined planes is a rigid plywood diaphragm, paired to form a giant self-supporting inverted V-beam which spans 10 feet from valley to valley and 26 feet from beam to beam. Posts, trusses and purlins are eliminated and the architect estimates that spans could be almost doubled where called for by the design.

Design adaptability. The plywood folded plate system provides large, clear floor areas and freedom in arranging—or rearranging—interior partitions. The folded plate creates an unusually attractive profile, with bays defining individual store areas.

FOR INFORMATION about fir plywood folded plate construction or other data—write
DOUGLAS FIR PLYWOOD ASSOCIATION
TACOMA 2, WASHINGTON
—an industry-wide organization devoted to research, promotion and quality control

Always specify by DFPA grade-trademarks



Fir plywood folded plate components were built on ground, crane-lifted into position in pairs. Heaviest lift was about 1,000 lbs. Contractor was impressed with the ease with which his crew assembled and erected sections.

The folded plate provides distinctive profile, freedom in placement of interior partitions. The front was given a 10' overhang to cover store entrances. Underside was covered with medium density overlaid plywood to provide smooth, check-free paint base.



For more facts, use Request Card at page 18 and circle No. 265



The Erie Strayer plant operates either on gas or electricity and can be moved easily to follow the job. Capacity is 60 yards per hour, with 3-yard batches.

Job-site batching plant features easy portability

A portable job-site batching plant that operates on either gas or electricity is announced by the Erie Strayer Co.

Designated Model TPA-TPC, the plant can be set up in 3 hours. Both units are mounted on rubber tires and are moved with two truck tractors. All conveying and batching equipment is permanently attached, and the wheels do not have to be dismantled when the unit is set up.

In the TPC Automatic, both charging and discharging valves are operated. The charging valve is equipped with electric eye for preliminary and final cutoff. Inching control is included on the discharging valve. When the start button is pushed, the cement is weighed, and the fill valve closing automatically at the exact weight desired.

Erie also offers an undertrack system for auxiliary silo and railroad station operation. Additional optional equipment includes autographic recorder bin extensions for increasing aggregate capacity, water storage tank, admixture dispenser, and auxiliary water pump.

Capacity for the new model is 60 cubic yards per hour, with 3-yard batches. The 3-compartment bin capacity is 28 yards heaped. The cement storage silo holds 175 barrels, with an auxiliary capacity of 450 barrels.

For further information write to the Erie Strayer Co., Dept. C&E, P.O. Box 1031, Erie, Pa., or use the Request Card that is bound in at page 18, Circle No. 105.

Expand generator line with 21 new models

Twenty-one new generating plants have been added to the D. W. Onan & Sons line.

The new models, both gasoline and diesel-driven, produce from 1 to 300 kw each.

The largest gasoline units will provide 150 kw, double the previous peak power available; the largest diesel unit, producing 200 kw, is 40 times larger than any other diesel model previously available from the Onan company.

For further information write to D. W. Onan & Sons, Inc., Dept. C&E, 2515 University Ave. S. E., Minneapolis 14, Minn., or use the Request Card at page 18, Circle No. 86.

New heavy-duty loader has 9-cubic-foot bucket

A new heavy-duty loader for Ford and Ferguson tractors is announced by the Freeman Loader Corp.

Known as Model M-601, the machine reportedly can lift 1,200 pounds to a height of 8½ feet (to bottom of bucket). Ease of attaching to tractor and removing are features, and no removal of tractor lights is necessary.

The 9-cubic-foot bucket (combined with gravel plate) is 40 inches wide and has bolted-in 1¼-inch axle steel teeth.

For further information write to the Freeman Loader Corp., Dept. C&E, Blair Pike Road, Peru, Ind., or use the Request Card at page 18, Circle No. 24.



When to use coated or paved Beth-Cu-Loy drainage pipe

Drainage pipe made from galvanized corrugated Beth-Cu-Loy (copper-bearing steel) sheets is both strong and light in weight. Its flexibility permits the pipe to flex with the fill to distribute loads more uniformly around the periphery. Its long lengths and simple field connections speed up installation.

Combats Corrosion and Abrasion

But for all these advantages, Beth-Cu-Loy pipe can be even further improved for use in culverts, storm sewers, conduits and other structures where there may be heavy corrosion and erosion in drainage. This is done by coating, or paving, the pipe with asphalt.



Fig. 1

A hot-dip coating of bituminous material substantially reduces the effects of corrosive conditions, and adds to the service life of the pipe. In addition, a paving of asphalt to cover the inside crests of the corrugations (see Fig. 1) further protects the pipe from wear caused by erosive materials such as heavy sand and gravel in the stream. The paving covers the inside crests of the corrugations to a depth of ¼ in., minimum, and is spread over an arc-segment of 90 deg. along the entire length (see Fig. 2). Such paving not only protects the pipe, but also lowers the coefficient of roughness in the bore.

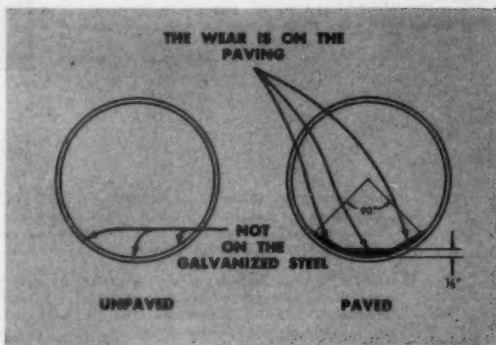


Fig. 2

All this and much more about drainage materials and design are fully discussed in a recent Bethlehem publication, Booklet 425-A, "Solving Drainage Problems." This booklet is crammed with illustrations, charts, tables, sketches, and nomographs to assist engineers and public officials alike in solving their drainage problems. It also includes some brand-new tables for evaluating flow friction. Ask your fabricator for a copy.

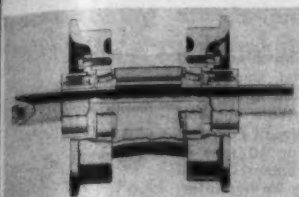
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 269





Cross section of Allis-Chalmers' positive-seal truck wheel.

Wheel greasing eliminated in crawler-tractor line

The Allis-Chalmers Mfg. Co. announces that greasing by the user is no longer necessary on its positive-seal truck wheels, front idlers, and support rollers for its entire crawler-tractor line.

Lubricated at time of assembly, these wheels require no further greasing attention regardless of mud, water, or other adverse operating conditions.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 27.

New transfer plant for bulk cement

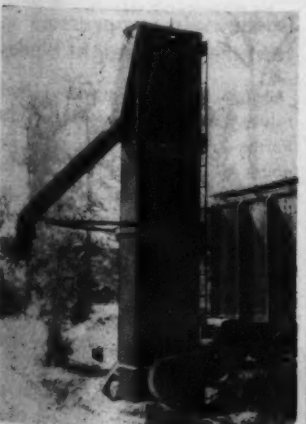
A 500-barrel-per-hour-capacity bulk-cement transfer plant, designed to require a minimum of maintenance, is announced by the C. S. Johnson Co.

Designed for transferring material from hopper cars to trailer or dump trucks, the plant is said to be easily transported and readily erected, with only minor excavation required prior to setup.

Bulk material is carried from the bottom of the hopper car by a 12-inch-diameter screw conveyor. The screw incline is adjustable up to 10 degrees.

Power for the screw conveyor and elevator is furnished by a gasoline engine with clutch takeoff, or by an optional 10-hp 220/440-volt electric motor.

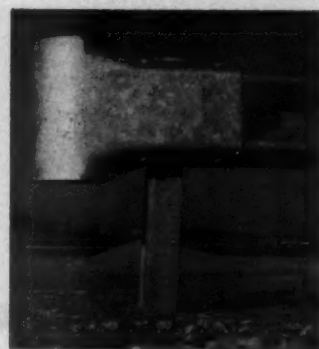
For further information write to the C. S. Johnson Co., division of Koehring Co., Dept. C&E, P. O. Box 71, Champaign, Ill., or use the Request Card at page 18. Circle No. 49.



Designed to move cement and other bulk material from hopper car to truck, the new Johnson plant is rated at a capacity of 500 barrels per hour.

For more facts, circle No. 270

The uniform zinc coverage given to the strip steel by continuous hot-dip galvanizing prior to cold-forming is discernible in this close-up of an installation of the Bethlehem Steel Co.'s highway beam guardrail with end terminal and post. The zinc coating is smooth and ductile; it reportedly does not flake, chip, peel, or crack. For further information write to the Bethlehem Steel Co., Dept. C&E, 701 E. Third St., Bethlehem, Pa., or use Request Card at page 18. Circle No. 118.

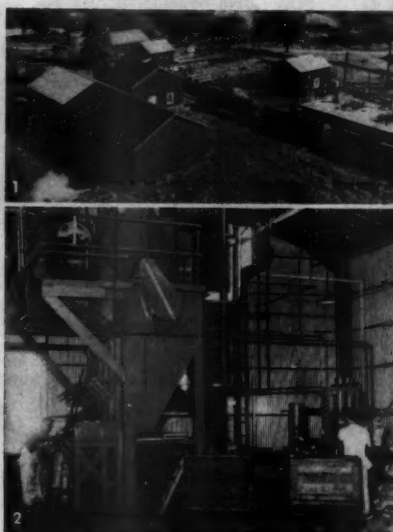


CYANAMID Explosives News

CYANAMID'S NEW CASTLE EXPLOSIVES PLANT INCREASES MANUFACTURING CAPACITY

In construction, mining and quarrying, the increased need for high quality industrial explosives continues to grow. To meet this demand, Cyanamid has recently completed a building and expansion program that includes a

new ammonium nitrate plant, as well as many new types of equipment, processes and other facilities. Shown here are a few photographs of the mighty 535-acre New Castle explosive manufacturing operations.



SALES OFFICES:

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Denver, Colorado
Kansas City, Missouri
St. Louis, Missouri
Missoula, Montana
Albuquerque, New Mexico
New York City, New York
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Lafayette, Pennsylvania
Pottsville, Pennsylvania
Dallas, Texas
Salt Lake City, Utah
Bluefield, West Virginia

PLANTS:

Grafton, Illinois
Lafayette, Pennsylvania
New Castle, Pennsylvania
Springville, Utah

High Explosives
Permissible
Steamship Explosives
Blasting Agents
Blasting Powder
Blasting Caps
Electric Blasting Caps
Blasting Accessories

Operation From Chemicals
Plasticity Research
Fluorinating Agents
Film Forming Agents
Surface Active Agents

1. One end of the tank battery, the refrigeration plant and storage facilities for glycerine and glycol. Partly hidden by trees (left center) is the gelatin line warehouse and gelatin line dope house.
2. The blasting agents building, where work is being done with an insensitive explosive. To detonate this mixture, a large priming charge of high explosives is required.
3. One of the large wooden chaser-mill type mixers in the dynamite

mix house. Here nitroglycerin and nitrocellulose are mixed with the "dope" as it comes from the dope house for processing. After mixing, the explosive has been formed. As dynamite, it is taken by tram line to the pack houses.

4. Here packaged explosives are shown on their way by tram to the storage magazine.

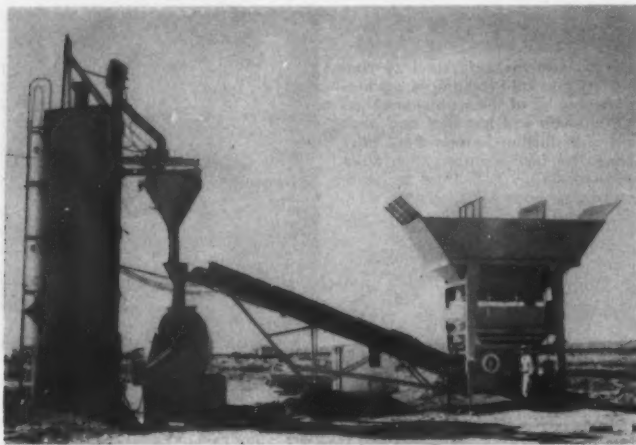
Cyanamid customers can be assured of highest quality and unequalled nationwide service now and in the future.

AMERICAN CYANAMID COMPANY

EXPLOSIVES AND MINING CHEMICALS DEPARTMENT

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Photo Number 2 by Jack Simon, New Castle (Pa.) News

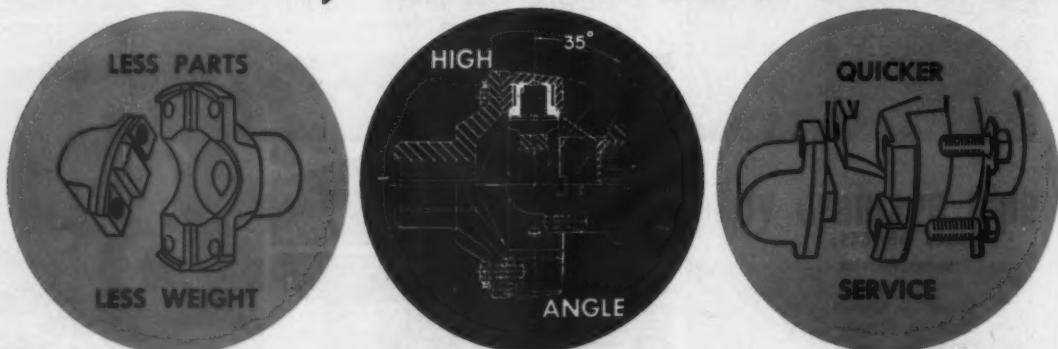


This easily transported, rapidly assembled concrete batching plant produces up to 60 cubic yards per hour for scattered, small-scale building in the Mojave Desert in California. According to concrete producer D. L. Holliday, the Noble unit supplies private building construction within a radius of 20 miles in the vicinity of Edwards Air Force Base. The plant has storage capacity for 40 tons of aggregate in 3 sizes and for 930 cubic feet of bulk cement. Cement is batched automatically, aggregates manually. For further information write to the Noble Co., Dept. C&E, 1860 Seventh St., Oakland, Calif., or use the Request Card at page 18. Circle No. 87.



MECHANICS

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nite, practical solutions. Send us a print or description of your particular joint needs—for MECHANICS engineers' recommendations to overcome your drive line difficulties.



Export Sales: Borg-Warner International
79 E. Adams, Chicago 3, Illinois

MECHANICS UNIVERSAL JOINT DIVISION

Borg-Warner • 2030 Harrison Ave., Rockford, Ill.

For more facts, use Request Card at page 18 and circle No. 271

Announce new heavy-duty direct-drive chain saw

A new direct-drive chain saw announced by Hoffco, Inc. Designated Super 88, the saw is available in three chain speeds: 2,200, 2,300, and 2,650 fpm—chain bars up to 36 inches and bars of 15 and 18 inches. It is pro-



ered by a rugged long-stroke, 4-bore (7.00) low-rpm engine equipped with an all-position carburetor and high-tension magneto.

According to the company, the centered control handle and thumb-button oiler makes possible balanced straight-line cutting. In addition, the unit is so designed as to eliminate air filter frost-over in freezing weather and ground pickup of dust and dirt.

For further information write to Hoffco, Inc., Dept. C&E, 411 E. Eighth St., Richmond, Ind., or use the Request Card at page 18. Circle No. 78.

Rotary air compressors feature lightweight blades

A new line of Hydrovane portable rotary air compressors featuring Perma-Vane rotor blades is announced by the Davey Compressor Co.

Of solid, lightweight material, these blades are said to have exceptionally good wear resistance. They move continuously in a straight line from the stator center, and cannot cock or bind.

The new line includes compressors of 125 to 800-cfm capacities.

For further information write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 52.

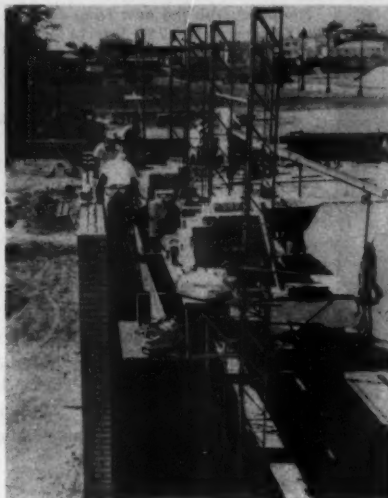
CONTRACTORS AND ENGINEERS

Frost-breaking attachment for 3/8, 1/2, 3/4-yard shovels

A frost-breaking unit that is easily installed on any 3/8, 1/2, or 3/4-cubic-yard shovel with a backhoe attachment is available from the Frost Breaker Co.

According to the manufacturer, a 3/8 or 1/2-yard machine can break from 1,600 to 8,000 square feet of ground per day. The ground is broken into small pieces that do not stick in the truck tail gate.

For further information write to the Frost Breaker Co., Dept. C&E, 12204 W. Bluemound Road, Milwaukee 12, Wis., or use the Request Card at page 18. Circle No. 32.



Morgen scaffolding moves up, without interruption, the mason, material, and laborer, as the wall is built. It is set up and planked only once for construction of any wall.

drum while the carriage is being raised or lowered. Nine-foot inserts permit towers of any height.

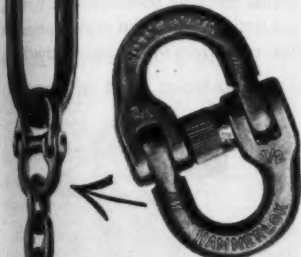
For further information write to the Morgen Mfg. Co., Dept. C&E, 117 W. Third, Yankton, S. Dak., or use the Request Card at page 18. Circle No. 44.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

MAKE YOUR OWN

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CM
HOISTS AND CHAIN

Adjustable scaffolding for masonry construction

A 2-level carriage with Sur-Stop winch is a recent innovation in Morgen adjustable scaffolding.

The new tubular-steel carriage has a separate mason's platform on one level; the width is adjustable from 14 to 24 inches. On a higher level, a wide material and laborer's platform provides ample room for wheeling and placing palletized material in

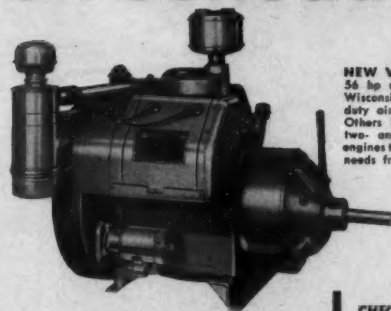
one move; its width is adjustable up to 6 feet.

The company points out that its scaffolding moves up, without interruption, the mason, the material, and the laborer, as the wall is built. It is set up and planked only once for construction of any wall.

The new winch is designed to give positive safety control of the cable

Here's why WISCONSIN ENGINES keep your construction jobs

"on schedule"!



NEW VR4B 4-cylinder 56 hp model tops the Wisconsin line of heavy-duty air-cooled engines. Others include single-, two- and V-type 4 cyl. engines to meet all power needs from 3 to 56 hp.

"plus" features assure full-time power in any climate!

The overwhelming acceptance by builders and users of Wisconsin-powered construction equipment, backed by cost-cutting field service records, prove that Wisconsin heavy-duty air-cooled engines rate first in performance and low-cost maintenance.

These rough-and-ready engines never say "die." They give you load-holding lugging power that slugs through sudden shock loads. Air-cooling design cuts weight and maintenance—delivers the most power per pound of engine weight. Quality construction assures long, trouble-free service—plus fast starts and dependable power round-the-clock in any climate!

Equally important—there's an authorized Wisconsin service station wherever you may be, to help you if and when you need parts or service. Write for complete service station directory S-198 — and product Bulletin S-237.

CHECK THESE WISCONSIN DESIGN FEATURES:

FORGED STEEL CRANK-SHAFT with tapered roller main bearings permits power takeoff direct from the shaft.

LARGE-CAPACITY FAN integrally cast with fly-wheel provides correct heat dissipation at temperatures from sub-zero to 140°F.

HIGH TENSION OUTSIDE MAGNETO with impulse coupling delivers fast starts at all times.

FULL LUBRICATION is provided by pump-circulated lubrication system, assuring top performance with less care.

SPECIAL EQUIPMENT available includes electric starting, LPG carburetion, etc.



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World's Largest Builders of Heavy-Duty Air-Cooled Engines

Job Finished 3 Weeks

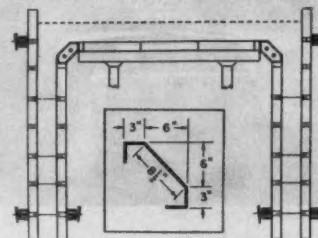


How to Pour a Tunnel in a Hurry...

Symons Culvert Forms The Answer

When awarded a contract to build a 340 ft. tunnel, Schweiger Construction Company, Kansas City, Mo., faced the problem of how to do it fast and as economically as possible.

Symons Culvert Forms solved the problem. They eliminated the need for any special form or job-built construction.



Schweiger used Symons 1" steel channel filler horizontally on top of 6' vertical panels on the inside of the walls. Culvert Forms were placed on top of this filler. The forms underneath were stripped with no difficulty and the fillers and culvert forms were then removed without disturbing the decking for the slab, which was left in place for an additional curing period. Walls and top slab were poured monolithically in three pours. Job was completed in three weeks.

Symons forms, shores and column clamps may be rented with purchase option. Additional information on Symons Culvert Forms is available upon request.

Symons

SYMONS CLAMP & MFG. CO.

4251 Diversey Ave., Dept. B-9, Chicago 39, Ill.

MORE SAVINGS FROM SYMONS

For more facts, circle No. 274

For more facts, circle No. 272

For more facts, use Request Card at page 18 and circle No. 273

JANUARY, 1959



Equipped with the new front-end discharge conveyor, a Parsons Model 250 Trenchliner loads a truck while digging a trench for a sewer project in Florida. The conveyor is especially useful in close-quarter work.

Conveyor for trencher loads right into trucks

A front-end discharge conveyor that loads spoil over the front of the trencher directly into trucks is available for the Parsons Model 250 Trenchliner.

Mounted within the main frame of the trencher and extending out over the main power unit, this conveyor allows over 10½ feet of clearance for loading into all sizes of trucks. The conveyor belt is cleated, 24 inches wide, and powered with an auxiliary engine.

The conveyor frame is hinged to reduce over-all length during transport. Converting from side to front-end discharge conveyor is a simple operation, the manufacturer states.

The Model 250 is designed to dig trenches ranging from 16 to 24 inches wide and to 12½ feet deep.

For further information write the Parsons Co., Division of Koehring Co., Dept. C&E, P. O. Box 431, Newton, Iowa, or use the Request Card at page 18, Circle No. 76.



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FOR COST SAVING
OPERATIONS ?**

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For meeting the toughest primary compaction specifications . . . for tonnage of finish material rolled per day . . . and for doing their job in the MOST ECONOMICAL manner — Galion ROLL-O-MATIC Rollers are supreme.

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THE GALION IRON WORKS & MFG. CO.
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GALION
ESTABLISHED 1907



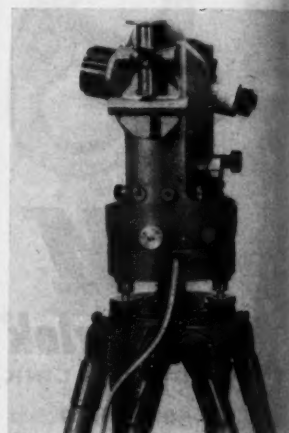
MOTOR GRADERS & ROLLERS

For more facts, use Request Card at page 18 and circle No. 275

British-made theodolite reads to 1 second of arc

The British-made Type II Theodolite is available from Precision Instruments, Inc.

Reading directly to one second of arc, the unit is equipped with an internal focusing telescope, spirit level, centering device, and optical plummet for centering over ground mark.



can be supplied with telescopic or non-telescopic tripod with press-down feet and leather strap, and is packed in special fittings in a metal case.

Horizontal and vertical circles are graduated every 20 minutes on glass annuli. A single optical micrometer is provided for both circles, the circle reading eyepiece being situated parallel to the telescope. A control on the standard enables the observer to select which circle is to be viewed.

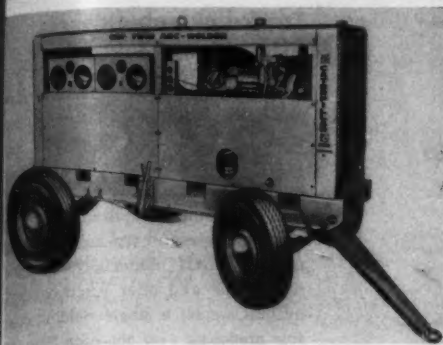
For further information write to Precision Instruments, Inc., Dept. C&E, 1900 Fifth Ave., Troy, N. Y., or use the Request Card at page 18, Circle No. 79.

New twin arc-welder is portable machine

A new portable twin arc-welder is announced by the Engine Division of the Caterpillar Tractor Co. The welder, equipped with either skid base or running gear, uses the Cat D11 (Series H) diesel engine and two Lincoln Electric welding generators.

The generators are rated at 300 amp at 40 volts for simultaneous operation of two arcs. For parallel operation the twin arc-welder is rated

CONTRACTORS AND ENGINEERS



Concrete batching units have drop-beam design

Three new concrete batching units with drop beams are announced by the Toledo Scale Corp.

One model provides manually operated drop beams; another, automatic cutoff for each ingredient and manually operated drop beams; and the third, motor-operated drop beams.

Each of the three drop-beam models uses the firm's double pendulum dial to provide an accurate weight indication. Operation of each of these systems is said to be simple, and differs only to the extent of the semi-automatic equipment standard to each model. The motor-operated sys-

tem automatically controls all ingredients except water, while the other models require either manual cutoff or manual initiation of the feed cycle.

The units are designed to compensate for water in the dry ingredients, maintaining the accuracy of the mix formula.

All models may provide for transmission of weight figures and data to remote locations.

For further information write to the Custom Products Division, Toledo Scale, Division of Toledo Scale Corp., Dept. C&E, Toledo 12, Ohio, or use the Request Card at page 18. Circle No. 58.

at 600 amp, 40 volts. The current range of each generator is 60 to 375 amp.

Two sets of generator controls allow welding at different voltages, amperages, and polarity at the same time to permit precision adjustment for any type or size of arc throughout the current range.

For further information write to the Engine Division, Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 50.

Diesel-powered tractor offered in two models

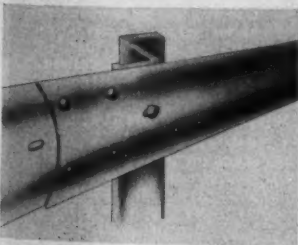
The Model 440 diesel-powered tractor, offered in both wheel and crawler models, is announced by the John Deere Industrial Division.

Powered by the GM Jimmy 2-cycle diesel engine, the tractor reportedly will deliver approximately 10 per cent more power than previous 440 models. The engine has a 3 $\frac{3}{4}$ -inch bore and 4 $\frac{1}{2}$ -inch stroke, with rated horsepower of 33 $\frac{1}{4}$ at 1,850 rpm. Displacement is 106.1 cubic inches; compression ratio is 17 to 1.

For further information write to the John Deere Industrial Division, Dept. C&E, 3300 River Drive, Moline, Ill., or use the Request Card at page 18. Circle No. 46.

Shallow-beam guardrail easy to erect, maintain

A newly designed easy-to-erect shallow-beam guardrail for commercial and secondary highways is of-



fered by the Syro Steel Co.

Available in 9 and 12 gage, the rail features shop-curved uniformity and prefitted drilled holes and slots for quick erection. It is finished in phosphatized baked-on, rust-inhibitive lead chromate.

For further information write to the Syro Steel Co., Dept. C&E, Girard, Ohio, or use the Request Card at page 18. Circle No. 80.

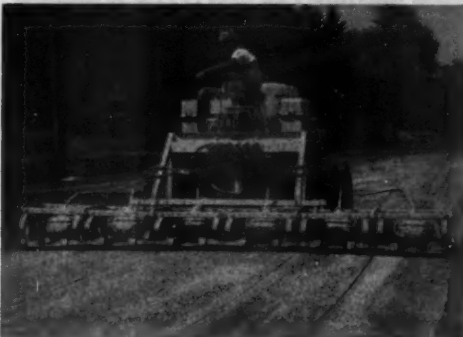
Maximum portability of the new Cat twin arc-welder is obtained by mounting on heavy-duty 4-wheel running gear with springs and mechanical brake.

THE NEW JACKSON TRAILER COMPACTOR



Push or Pull it...

WITH *ANY PRIME MOVER



TEAMMATE OF THE FAMOUS JACKSON MULTIPLE COMPACTOR which was used exclusively for the compacting of sub-bases on the highly critical A.A.S.H.O. TEST ROAD and most all major highway projects. An excellent means of providing compaction at its quickest and best is offered in the choice of these two machines.

For the host of contractors acquainted with the outstanding performance of the Jackson Multiple Vibratory Compactor, the advent of the new TRAILER COMPACTOR will be great news. For here is a machine basically similar, costing considerably less, that can be PUSHED or PULLED BY *ANY PRIME MOVER CAPABLE OF SLOW (50 f.p.m.) WORKING SPEEDS . . . TOWED TO LOCATION AT ANY ROAD SPEED . . . OPERATED IN EITHER DIRECTION, NO TURNING OR BACKING NECESSARY . . . REMOTELY CONTROLLED BY OPERATOR OF PRIME MOVER. WORKHEAD MAY CONSIST OF 3, 4, 5, or 6 VIBRATORY UNITS, (each developing 6,000 lbs. of force at 4200 RPM) OR TWO WORKHEADS OF 4 UNITS EACH MAY BE EMPLOYED. INDIVIDUAL UNITS MAY BE DETACHED AND OPERATED SEPARATELY. POWER PLANT SUPPLIES BOTH SINGLE AND 3-PHASE 110-150 VOLT, 60-80 CYCLE AC AND HAS MANY USES.

Write, wire or phone for additional information.

JACKSON VIBRATORS, INC. LUDINGTON, MICH., U.S.A.

For more facts, use Request Card at page 18 and circle No. 276

Koehring's Model 330 truck crane has a 30-ton lifting capacity.



Offer new truck crane with 30-ton capacity

Heavy lift capacity—up to 60,000 pounds when working at a 15-foot radius—is one of the important features of the new Koehring Model 330 truck crane. Boom jibs 15, 20, 25, and 30 feet long can be added to a maximum 120 feet of boom for unusually high lifts. Boom lengths up to 80 feet

are allowed for bucket work.

Both automatic power boom lowering and safety boom limit stops are standard equipment. Koehring's new combination pin-pad connected boom, which permits two-man boom-length changes, is also standard on the Model 330. Lugs on the boom allow folding at any joint.

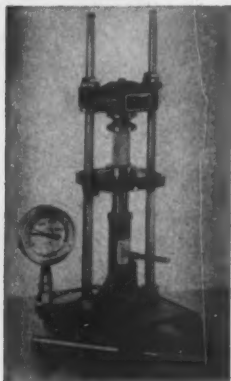
Total weight of the new truck crane (with a 30-foot boom) is 67,830 pounds. This can be reduced to 46,960 pounds by removal of boom, outriggers, pedestals, and counterweight. The counterweight is removed by

power-lowering the A-frame.

The truck is driven by a 6-cylinder 214-hp gasoline engine and has eight speeds forward—four in main and two in auxiliary transmission. Top travel speed is 29.1 mph. Maximum reverse speed is 4.03 mph. Upper machinery can be powered by either a gasoline or diesel unit. Air brakes are used on rear axles.

For further information write to the Koehring Co., Dept. C&E, 3026 W. Concordia Ave., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 119.

Cut Road Building Costs with SOIL AND BASE MATERIAL TESTS... on the CARVER LABORATORY PRESS



Numerous soil tests necessary prior to road building or other construction can be quickly and easily accomplished on the portable, hand-operated, self-contained CARVER LABORATORY PRESS. Moisture content, compaction, shear and other soil or base material characteristics are readily determined with this on-the-spot equipment.

Samples are quickly pressed for soil tests or further analysis and testing with Carver Test Cylinders, available in two sizes—1½" and 2¼" diameter. Other Standard Accessories available include Carver Swivel Bearing Plates for comparative crushing tests of 2" x 2" cubes; 2" x 4" cylinders and like requirements.

Several state road departments have used this equipment successfully for years. A Florida State Road Dept. engineer reports "Six Carver Presses are used daily for the numerous soil tests—." They have recently purchased four additional presses. The Texas State Highway Dept. has purchased over 30 Carver Laboratory Presses for such use—perhaps this thoroughly standardized Press will answer your pressing problems.

- CRUSHING TESTS • BRIQUETTING
- BREAKING TESTS • SHEAR TESTS
- BENDING TESTS

FRED S. CARVER INC.
HYDRAULIC EQUIPMENT
7 CHATHAM ROAD, SUMMIT, N. J.

Send catalog, describing Carver Laboratory Press and Standard Accessories.

NAME

FIRM

ADDRESS

For more facts, use coupon or circle No. 277

102

GET THE TIE-WIRE PROBLEM

off your neck...

Workers recognize the danger of carrying re-bar tie wire in cumbersome shoulder coils—the ever present hazard of loose ends causing facial or eye injuries—the danger of being thrown off balance when the coil catches on a protruding object.



and put it where it belongs

They are equally quick to recognize the safety and convenience of using CF&I Cal-Tie Wire in our new, compact dispenser. It leaves both hands free • wire can't kink or catch • work in close quarters is easy and safe • no discarded coils to trip workers • speeds up job time.

Try Cal-Tie Wire in the new belt-borne CF&I handy reel dispenser. Together they weigh less than seven pounds. Are available in 14-through 20-gage annealed wire. Contact our nearest sales office for full details.

5935

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THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita • WICKWIRE SPENCER STEEL DIVISION — Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia • CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

For more facts, use Request Card at page 18 and circle No. 278

Track-link rebuilder offers many features

A new track-link rebuilding machine, the Model TLM-2, is available from L & B Welding Equipment, Inc.

The major features of this machine include two wire feed units for welding both links simultaneously; an electronic eye and the accompanying patterns that materially decrease setup time and offer positive intermittent welds; a single welding enclosure enclosing two 500-amp, 100 percent duty cycle, 3-phase, constant potential, welding supplies; flux handling and dispensing equipment for rapid handling of welding flux.

As optional equipment, a 4-spindle

for FASTER, more ACCURATE HIGHWAY MEASURING

USE A

ROLATAPE MEASURING WHEEL



FOR HIGHWAY REPAIR

One man can measure as fast as he normally walks when using the Rolatape 400. Total is automatically recorded in full view of the operator.

HIGHWAY CONSTRUCTION

Rolatape's accuracy and speed are ideal for important measurements connected with estimating, daily progress reports and final inspection.

HIGHWAY MAINTENANCE

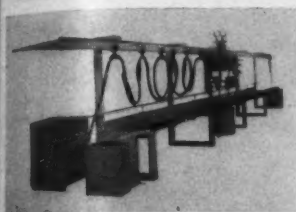
Street marking and sign placement require accurate measurements—the degree of accuracy you get with Rolatape's precision —400 wheel.

WRITE TODAY FOR FULL DETAILS

ROLATAPE, INC.
1741 14th ST. SANTA MONICA, CALIFORNIA

For more facts, circle No. 279

CONTRACTORS AND ENGINEERS



Two wire feed units for welding both links simultaneously are included among the features on the Model TLM-2 track-rebuilding machine.

fixture for utilizing the dual heads for rebuilding rollers and idlers is available. This fixture can be rotated for rebuilding both inside surfaces of the roller flanges without the removal of the roller.

For further information write to L & B Welding Equipment, Inc., Dept. C&E, 2424 Sixth St., Berkeley, Calif., or use the Request Card at page 18. Circle No. 45.

Storage battery features replaceable-cell design

A replaceable-cell storage battery said to permit the setting up of any voltage or amperage merely by adding or removing cells is available from the Scranton Cellomatic Battery Corp.

Integral dovetails permit accurate, permanent cell positioning yet allow instant removal, replacement, or rearrangement. Individual cells can be replaced in case of cell failure. Cells can also be arranged to fit practically any space requirement, the manufacturer states.

For further information write to the Scranton Cellomatic Battery Corp., Dept. C&E, Archbald, Pa., or use the Request Card at page 18. Circle No. 104.

GOT THIS? (Predraining Problem)



GET THIS! (Skilled Wellpoint Engineering)



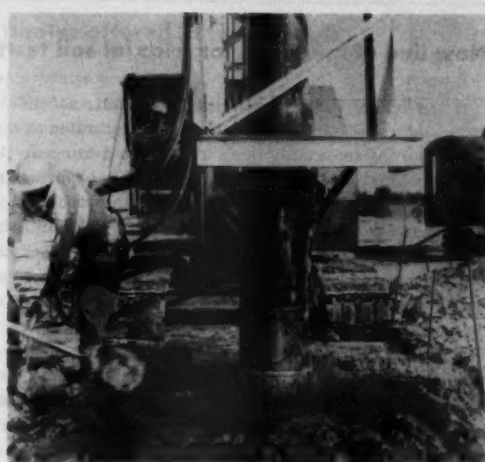
From

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hawthorne, Ind. Houston, Tex. Jacksonville, Fla.
West Palm Beach, Fla.

For more facts, circle No. 280

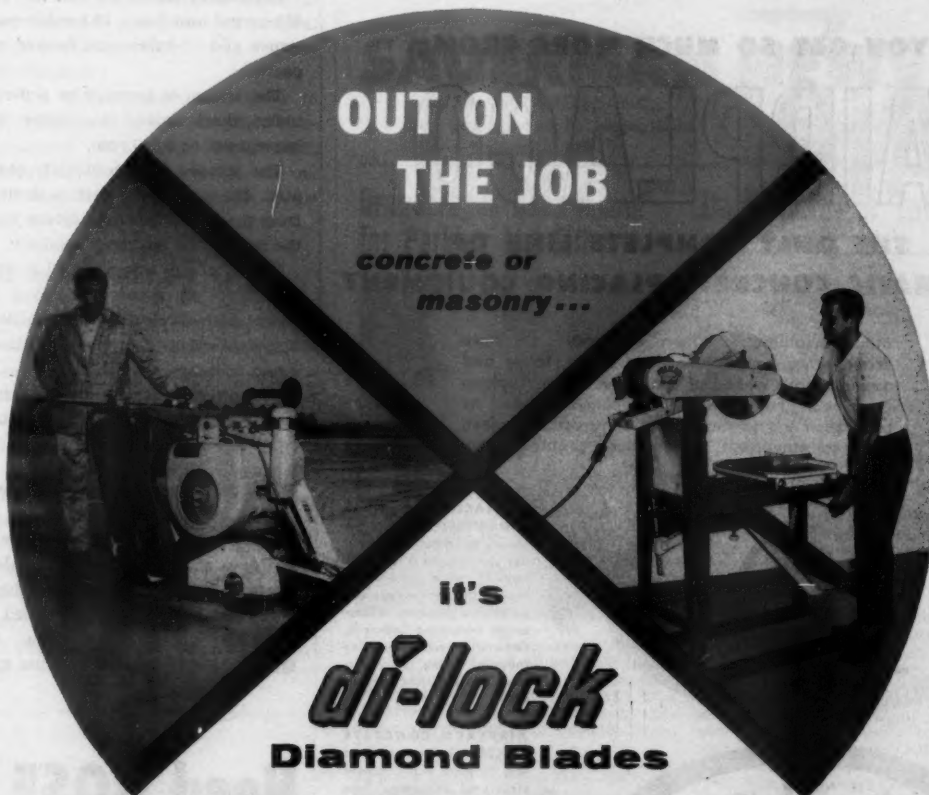
FEBRUARY, 1959

Compacting loose sand into a uniform mass capable of supporting the heaviest loads is the job of this Vibrofloat jet-type vibrating machine. The process, called Vibrofloatation, is a service offered by the Vibrofloatation Foundation Co., a subsidiary of The Rust Engineering Co. The job site is the University of South Florida, at Tampa, where a foundation without the need for piling is being constructed for a group of campus buildings. By raising the vibrator and simultaneously backfilling with fresh sand, the soil is compacted to specified depths varying from 10 to 20 feet. A cylindrical compacted column about 8 feet in diameter is thus produced. For further information about this service, write to the Vibrofloatation Foundation Co., Dept. C&E, 930 Fort Duquesne Blvd., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 74.



OUT ON THE JOB

concrete or
masonry...



It's

di-lock

Diamond Blades

2 to 1

On test after test from one coast to the other, DI-LOCK stands out above all other diamond blades.

Users report "LONGER LIFE"... as much as 78% more! "FASTER CUTTING"... speed that keeps ahead of every job requirement! "MUCH LOWER COST"... based on actual number of cuts or footage produced against original blade cost!

Felker DI-LOCK insures the three essentials to blade economy—longer life, faster cutting, lower cost per cut or per foot—by the DI-LOCK method of diamond bonding... an exclusive process that seizes each diamond particle and locks it in the segment more tightly than ever before possible!

FOR MAXIMUM FOOTAGE AT LOW COST
buy the diamond blade whose results are confirmed by contractors... Volume users of Felker Di-Locks!



FELKER MANUFACTURING CO.

Torrance, California

For more facts, use Request Card at page 18 and circle No. 281

New line of machines for triaxial soil testing

A new line of testing machines for stress-controlled triaxial testing is announced by the Tinius Olsen Testing Machine Co.

Axial loads are applied pneumatically; positive load application is said to be assured by the accurate test gage in the base of the machine, which shows exactly what load will be applied before it is imposed on the soil sample. When a toggle valve is opened, this preselected load is applied instantly and without impact, and can be maintained indefinitely.

The test chamber is an independent

unit, so that soil samples may be saturated in separate chambers without tying up the machine itself. The lateral-pressure air system is built into the base of the unit.

The units are available in axial load capacities of 1,500 and 3,000 pounds, and special machines can be supplied with capacities up to 10,000 pounds.

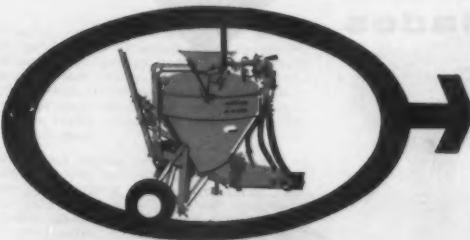
For further information write to the Tinius Olsen Testing Machine Co., Dept. C&E, 733 Easton Road, Willow Grove, Pa., or use the Request Card at page 18. Circle No. 96.

YOU GET SO MUCH MORE FROM AIRPLACO THE ONLY COMPLETE LINE OF PNEUMATIC CONCRETE PLACING EQUIPMENT

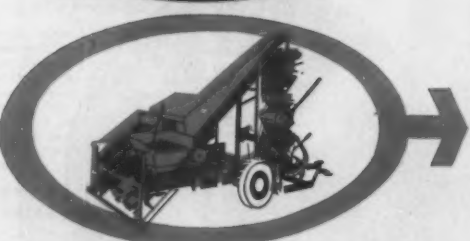
More versatility . . . more efficiency . . . more economy . . . more jobs done better, faster and easier. That's what you can expect from Airplaco equipment. From the simplest concrete repair or restoration job to the largest construction project, Airplaco equipment means more profit to you.



AIRPLACO BONDACTORS AND NUCROTORS. With five models to choose from, you can gun concrete at any rate from 1/2 to 8 cu. yd. per hour. Airplaco guns are adjustable to a variety of materials including concrete, refractories and insulating concretes. There is an Airplaco gun just right for your needs.



AIRPLACO CONCRETE PLACERS. The new, low-cost way to place and distribute structural concrete. Two models give you production rates of from 8 to 25 cu. yds. of material per hour. Concrete is conveyed through lightweight placement tubing to any point on the job. Serves equally well in grouting operations. Save many man hours with this flexible new method.



AIRPLACO MIX-ELEVATORS. Automatic proportioning, mixing and elevating equipment. Three models deliver up to 12 cu. yds. of mix per hour. One model has built-in aggregate dryer that reduces moisture content of sand. Teamed up with an Airplaco gun, the Mix-Elevator gives you a most efficient and mobile gunning rig.

Let Us Help You Solve Your Concrete Problems

Our experience in solving unique problems involving the handling of concrete has saved thousands of dollars for others. This experience is available to you. Write, wire or phone us, anytime.

WRITE FOR FREE CATALOG

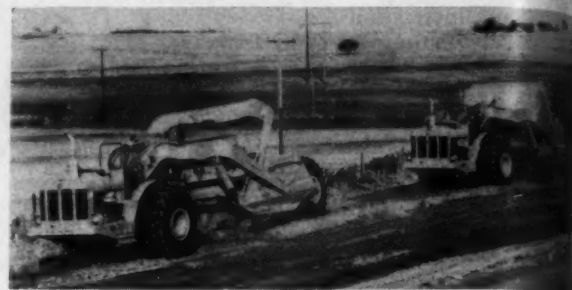


**AIR PLACEMENT
EQUIPMENT CO.**

1007 WEST 24TH ST. • KANSAS CITY 8, MO.

WORLD'S LEADING MANUFACTURER OF "ADVANCED DESIGN" PNEUMATIC PLACING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 282



These two Allis-Chalmers Model TS-260 medium-size motor scrapers are powered by the A-C 16,000, a 6-cylinder diesel engine developing 230 horsepower at 2,000 rpm. According to the company, the TS-260 can make a 180-degree turn in approximately 29 feet.

Medium-size scraper holds 12.5 yards struck

Allis-Chalmers has available a new medium-size motor scraper.

Designated Model TS-260, the 44,800-pound unit has a 12.5-cubic-yard struck and 17-cubic-yard heaped capacity.

The tractor is powered by a 6-cylinder diesel engine developing 230 horsepower at 2,000 rpm.

The scraper is hydraulically operated. Its source of power is derived from the gear-type pump driven from the rear of the engine crankshaft.

Design of the scraper bowl is wide and low—116 inches wide and 53 inches high. It also features positive, forced ejection of material with an apron opening of 100 3/4 inches.

For improved scraper performance, the hydraulic bowl lift jacks are posi-

tioned under the scraper main frame. This angular mounting permits low-speed high-leverage action when the cutting edge is in dig position, and changes to a higher speed and lower leverage action as the bowl approaches carrying position.

Both tractor and scraper are equipped with an automatic emergency system that keeps air from escaping and maintains braking power.

The 90-degree steering system permits a 180-degree turn in approximately 29 feet, according to the manufacturer.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 92.

New car shaker unloads with minimum of noise

The Carquake, a hydraulically powered car shaker designed to unload hopper-bottom railroad cars with a minimum of noise, is announced by the Stephens-Adamson Mfg. Co. Quickly, easily, and safely, one man

controls the entire operation from a hydraulic control panel.

The unit is available in two models: Type B, stationary-mounted; and Type C, rail-mounted.

The Type B Carquake is designed

Need HOSE in a HURRY?

**Suction • Water • Steam
Air • Multi-Purpose
Discharge • Pile Driver**

Wherever your job is—whenever you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—when and where you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call Continental. You'll like the fast service and dependable quality you get from these warehouses:

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477 Eighth St. N.E.

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BOSTON (Ails. 34), Mass.
12 Franklin St.

CHICAGO 10, Ill.
10 West Hubbard St.

CINCINNATI 2, Ohio
49 Central Ave.

CLEVELAND 15, Ohio
2731 Prospekt Ave.

DETROIT 27, Mich.
13801 Schoolcraft Ave.

INDIANAPOLIS 4, Ind.
309 North Capitol Ave.

MEMPHIS 3, Tenn.
268 Madison Ave.

NEW YORK 7, N. Y.
81 Murray St.

PHILADELPHIA 4, Pa.
311 North Randolph St.

ST. LOUIS 8, Mo.
4018 Olive St.

SYRACUSE 3, N. Y.
739 Montgomery St.



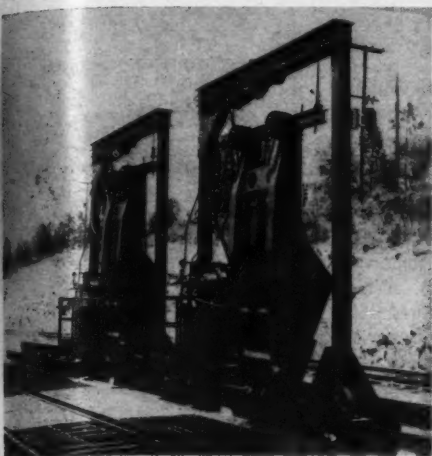
Continental Suction Hose is recognized nationally by contractors for its superior quality—not an ordinary hose, but a hose built for rugged, dependable service. Sizes 1 1/2" through 12", for water and/or sand suction. Send for catalog of HOSE and PROTECTIVE CLOTHING.

**HOSE by
CONTINENTAL**

CONTINENTAL RUBBER WORKS • 1989 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

For more facts, use Request Card at page 18 and circle No. 283

CONTRACTORS AND ENGINEERS



The rail-mounted Type C Carquake can travel at speeds up to 50 fpm. Another model, the stationary-mounted Type B, is designed for applications where only slight movement parallel to hopper cars is required.

for applications where only slight movement parallel to hopper cars and track is required. It may be mounted with anchor bolts to a concrete hopper foundation or steel structure.

The Type C is propelled by a hydraulic motor offering speeds up to 50 fpm. It can travel any desired distance and unload at any point along its travel.

The Carquake's clamping feature is said to make the shaker an integral part of each car structure to which it is attached.

For further information write to the Engineering Division, Stephens-Adamson Mfg. Co., Dept. C&E, Ridgeway Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 89.

New lightweight concrete stands up to 1,430 psi

A new type of controlled-density precast cellular concrete, said to be well suited for both cast-in-place or tilt-up construction systems, is announced by the Reflectal Corp.

Called Betocel, the concrete features a lightness in weight that permits use in slabs as large as 10 feet high by 20 feet wide, according to the company.

Betocel consists of sand, cement, water, and a special bubble-forming emulsion. Seven minutes after mixing, it can be poured into molds or forms, troughed, pumped, or carried

in buggies, and can be screeded as soon as it is poured. Its density reportedly can be controlled from 20 to 75 pounds per cubic foot, and it can be prepared to stand a compressive strength as high as 1,430 psi.

Completely incombustible, Betocel can be painted, plastered, tiled, stuccoed, sawed, screwed, and nailed.

For further information write to the Reflectal Corp., Dept. C&E, 200 S. Michigan Ave., Chicago 4, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 59.

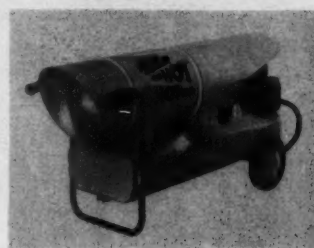
Portable space heater offered in two models

A new portable space heater is offered by the Kelley Machine Division of the Wiesner-Rapp Co., Inc. Called the Hot-Shot, the heater is available in two models: Model 120-KHA, a 120,000-Btu unit, and the 320,000-Btu Model 320KHA.

Standard equipment includes a thermostat that can be set for the desired temperature of any enclosed area, a low-speed fuel pump, and an automatic switch that shuts off fuel when low.

The Kelley Hot-Shot is oil-fired and operates instantaneously on 115-volt 60-cycle single-phase current.

For further information write to



the Kelley Machine Division, Wiesner-Rapp Co., Inc., Dept. C&E, 285 Hinman Ave., Buffalo 23, N. Y., or use the Request Card at page 18. Circle No. 8.

SAUERMAN NEWS SAUERMAN BROS., INC., 624 South 28th Avenue, Bellwood, Illinois Linden 4-4892

DragScraper Uses Island for Parking Lot Fill



An island in the Kalamazoo River was used for parking lot fill by the Harrington Construction Co. of Fennville, Michigan. The job was handled by a Sauerman 3-yd. Crescent DragScraper and carrier assembly used with an Insley WB crane.

The hoisting line of the Insley served as track cable, running from the hoist drum through the middle sheave of the boom tip to a tree anchor on the island. The drag cable was attached to the front chains of the Crescent.

After digging and hauling to bank, the track cable was tensioned to lift the DragScraper and gravity return it to the excavation over 400 ft. away. Round trip took about a minute and a half. The 70-ft. crane boom was supported by two back stay cables leading from the boom tip to two tractors used as anchors.

(Condensed from Sauerman News No. 149.)

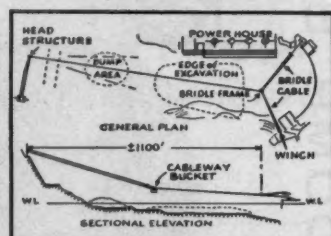
High Bank Digging



DragScraper works on face of 175-ft. bank, hauls load 600 ft. Rapid Shifting Tail Bridge changes line of operation.

(Condensed from Sauerman News No. 150.)

De-Rocking a Tailrace



When the Washington Power Co. completed its Cabinet Gorge power plant and dam, an accumulation of rock at the discharge of the draft tubes had to be removed to insure unobstructed flow for the tailrace.

A Sauerman 2 1/2-yd. Slackline Cableway, equipped with a rapid-shifting bridge system, was selected to do the job. Over 28,000 cu. yds. of rock varying in size from 6 in. to 5 ft. have been removed since the Slackline was installed. It is a permanent installation and is used periodically to clear the area in front of the draft tubes.

The Slackline operates on a 1000-ft. span. Material is excavated from 35 ft. of water and conveyed in the 2 1/2-yd. bucket to a waste pile about 150 ft. below the tubular steel head mast. Power is supplied by a hoist located 190 ft. from the mast. The bucket and carrier assembly rides on a track cable, the lower end of which is attached to a rapid-shifting bridge frame controlled by a 10-hp. motorized spool-type winch. The rapid-shifting device permits the bucket's line of operation to be shifted laterally.

(Condensed from Sauerman News No. 143.)



MORE NEWS AND INFORMATION

Issues of Sauerman News giving greater detail about the installations on this page are available on request. For full information, tell us your interest or requirements and ask for catalog. Contact Sauerman Bros., Inc., 624 S. 28th Ave., Bellwood, Ill.

DOTMAR
helps you
cut costs
2 ways!

1 DOTMAR CURB AND GUTTER PAVER

The only versatile paving machine on the market today! Lays up to 10' per minute of finished curb and gutter curb alone, combination gutter, curb and walk, median strip or drainage gutter. Saves 1/3 to 1/2 over old hand methods. Paves any curb and gutter section. Tamps, strikes-off and compacts concrete. Increases concrete yield. The original paver. Our 12th year serving the construction industry. Send for literature.



2 DOTMAR MAGNALITE FORMS

Cut costs because workers can handle and set up more forms per day with no strain. Magnalite Curb and Gutter Forms are made of tough magnesium alloy. A 12" x 10' form weighs only 47 lbs.—one third the weight of steel. More forms transported with lighter equipment. Send for data.



MAKERS OF DOTMAR AIR ACE PNEUMATIC HAMMER AND TOOLS

Dotmar INDUSTRIES Inc.

519 HANSELMAN BUILDING KALAMAZOO, MICHIGAN

For more facts, use Request Card at page 18 and circle No. 284

FEBRUARY, 1959

For more facts, use Request Card at page 18 and circle No. 285

Product Parade

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the Request Card at page 18.

NEWS ABOUT THE DUMP BODY BUSINESS

Performance Bonus!

Six Marions Provide Big Daily Payloads On Double-Duty Fill Dirt-Coal Hauling Jobs

MARION
BODIES AND HOISTS

Since May, 1958, six Marion 13 cubic yard bodies have been performing double-duty for Frank Murphy Trucking of Zanesville, Ohio. On days when the weather prevented hauling dirt for building an overpass on highway 16 in Newark, Ohio, the units were kept busy hauling coal.

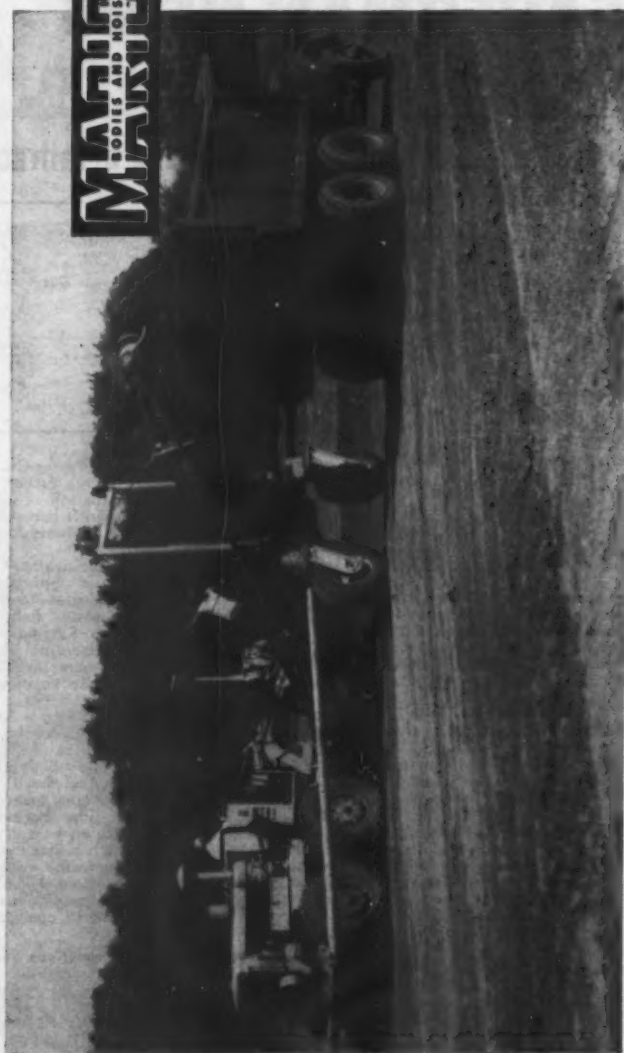
The owner, Frank Murphy, has been well pleased with the continuous operating dependability and efficiency of the units during these nine months. On the road building job, each truck has maintained a high daily payload rate of 450 yards of dirt during each 10-hour shift. Each unit makes 40 to 50 of the 1½-mile round trips a day. The Marions are loaded in 30 to 40 seconds with a grader-conveyor.

The 13 cubic yard bodies are raised with a Marion front telescopic hoist Model LF-614-T-120.

Get all the facts on Marion bodies and hoists for construction... quarrying... mining... all your hauling requirements.

MARION METAL PRODUCTS CO.

Marion, Ohio, U.S.A.



For more facts, use Request Card at page 18 and circle No. 286

ROBESON



"Tougher Than Elephant Hide"

ROBESON PRESERVO CO.

164 MERCHANT ST., PORT HURON, MICH.

TURN MAINTENANCE COSTS INTO PROFIT DOLLARS PROTECT YOUR EQUIPMENT WITH ROBESON RUST-INHIBITOR PRIMER AND HEAVY-DUTY ENAMEL

The PRIMER gives excellent rust-resistance, is fast drying (30-40 min.) and abrasion-resistant. It forms an excellent surface for applying the enamel. Performs equally as well on marine and floating equipment.

The ENAMEL is grease and oil-resistant and only one primer and one enamel coat is usually needed. Gives high coverage, excellent color retention and may be applied with brush or spray gun. 12 high gloss colors.

Use ROBESON PRESERVO to protect tarps. This easily applied liquid makes all canvas water, weather and mildew-resistant and prevents ice from clinging. Doubles the life of canvas.

For more facts, use Request Card at page 18 and circle No. 287

Grouser-plate hardness increases with wear

A complete line of heavy-duty, wear-resistant grouser plates for all standard model crawler tractors is offered by Kensington Steel.

Cast of a specially alloyed manganese steel called Supermang, these plates are said to have an exceptional initial hardness, and to develop an even greater degree of surface hardness in the areas where continued wear and abrasion cause the most trouble. They are available in regular, flat, and semi-grouser types and are completely interchangeable with those originally mounted on the tractor.

Among other features claimed are beveled grouser cleats, said to produce less resistance to steering clutches and braking mechanism; and countersinking of all holes in the plate to eliminate wearing action on the bolt head.

For further information write to Kensington Steel, Division of Poor & Co., Dept. C&E, 505 E. Kensington Ave., Chicago 28, Ill., or use the Request Card that is bound in at page 18. Circle No. 25.

New rear axles offered for heavy-duty trucks

Three new 2-speed double reduction-type rear axles for heavy-duty International trucks have been announced by the motor truck division of the International Harvester Co.

These axles—the RA-162, RA-167, and RA-172—are available for the Models A-184 and AC-1890 and for 190, 200, and 220 Series trucks. All are suitable for highway or off-highway operation.

The RA-162 is rated at 18,500 pounds carrying capacity, and is used in vehicles having 25,000 pounds gv weight and a 50,000-pound gross combination weight.

The RA-167 is rated at 23,000 pounds carrying capacity. It is used in vehicles having 29,000 pounds gv and 55,000 pounds gcw.

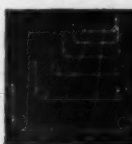
The RA-172, rated at 23,000 pounds carrying capacity, is used in vehicles with 30,000 pounds gv and 65,000 pounds gcw.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 9.



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**RIGID
BEAM
CLIP**

5' lengths
— installed with lightning speed.
Made of #12 or #10
gauge galvanized.

**HAUNCH
STIFFENER**

for beams over
16" deep. Made
of #10 or #12 gauge
galvanized wire.



**TOGGLE
HANGERS**

More rigid than
any wire. Used in
conjunction with

SYLGAB SNAP-ON HAIRPIN CLIP
to tie main and cross lurring together.

Sylgab Steel & Wire Accessories conform to the specifications of the Concrete Reinforcing Steel Institute.

Quality — Service
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79-05 Cooper Ave., B'klyn 27, N.Y.

BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES
Request Catalog—Phone or Wire Collect

For more facts, circle No. 288

CONTRACTORS AND ENGINEERS

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FERRILAS

Aggregate stabilization plant handles 1,000 tph

The Boardman Co. has available a 1,000-tph central-mix stabilization plant.

Completely portable, the plant features double discharge hoppers. It may be obtained with or without air brakes.

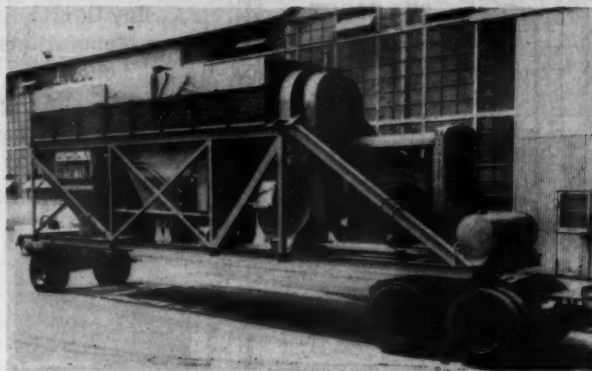
The basic unit includes a twin-shaft pugmill-type mixer and a 5-cubic-yard discharge hopper with a hydraulically operated clamshell gate. An operator's platform runs the full length of the unit. Also included are a self-priming water pump and precision water meter to assure an ac-

curate water flow to the spraybar.

Although basically designed for the preparation of stabilized aggregate base material, with the addition of a silo the unit can be converted to a soil-cement stabilization plant.

Everything on the plant can be controlled from a central control panel on the operator's platform.

For further information write to The Boardman Co., Dept. C&E, 1403 W. 11th St., Oklahoma City, Okla., or use the Request Card that is bound in at page 18 of this issue. Circle No. 67.



Fully portable, this 1,000-tph-capacity plant has double discharge hoppers. The manufacturer points out that, with the addition of a silo, the unit can be converted to a soil-cement stabilization plant.



Production of 2,000 linear feet of finished roll curb and gutter in a 9-hour working day, through the use of a Dotmar paver, is reported by the M. G. Monte Contracting Co., of Mt. Clemens, Mich. The work is being done on the Edsel Ford Expressway undergoing extension in Detroit. The company points out that the ready-mix truck can dump its entire load between the forms immediately upon arrival, as the material is not run through the paver. For further information write to the Dotmar Industries, Inc., Dept. C&E, 519 Hanselman Bldg., Kalamazoo, Mich., or use the Request Card at page 18. Circle No. 5.

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CONCRETE MEMBERS
Accurately,
Economically
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STEEL FORMS

DESIGNED FOR USE on a flat casting bed, Form-Crete all steel forms are engineered to produce the highest quality smooth finish, prestressed and precast products. Carefully engineered product release angles permit easy stripping of cast product and heavy-gauge steel construction provides an indefinite form life. What's more, many Form-Crete forms can be quickly adapted to produce a variety of products keeping form investment costs low, output high.

Get into the profitable prestressed concrete business now with accurate, economical Form-Crete steel casting forms. A newly revised catalog is yours for the asking. Write for your copy today.



Widely recommended and used throughout the building industry, prestressed concrete helps speed construction, provides unusual design features and materially reduces building costs.



Low initial cost, immediate availability and minimum maintenance give impetus to the use of prestressed pilings and beams in the nation's bridge building program.

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FOOD MACHINERY AND CHEMICAL CORPORATION
LAKELAND, FLORIDA • RIVERSIDE, CALIFORNIA

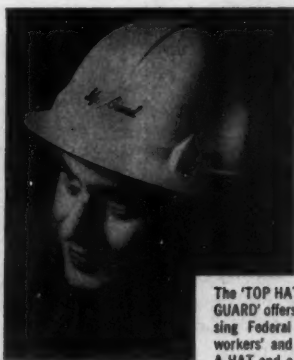
Please send me a copy of your new Catalog No. 300.

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For more facts, use coupon or Request Card at page 18 and circle No. 290

Jackson FIBER GLASS HATS and CAPS surpass all Federal tests for construction workers' safety hats. In eight standard colors, others in quantities.

COMBINATIONS of Safety Caps available with welding helmets, goggles, face shields.



Jackson 'ALUMIHAT' and 'ALUMICAP' comply with Federal Specifications except electrical resistance. Both in satin finished aluminum.

The 'TOP HAT' for Safety... Jackson's 'LIFE GUARD' offers unequaled protection by surpassing Federal Specifications for construction workers' and Edison Institute tests as well. A HAT and a CAP in white, yellow, and grey.

tops

• TOPS IN COMFORT

To men who wear safety hats all day long, comfort is important. Jackson hats and caps fit well and bear smoothly and evenly on the head.

See how little it takes to fit the headband to clearly marked hat sizes. And, being easy to fit, men will fit these hats accurately, so they stay on better in windy weather. Chin straps and winter-liners are also available.

The polyethylene headband is smooth and flexible, yet firm enough to hold its shape. A soft-backed leatherette sweatband fits all around.

• TOPS IN STYLE

They protect without looking bulky and have a well designed, uncluttered look. Easy to clean, they keep their shiny, smooth finish.

• TOPS IN SAFETY

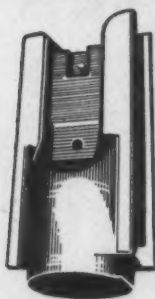
Thorough comparative testing against published industry-accepted standards proved that Jackson's three types of safety hats, each in its own class, offer an extra margin of safety. They should be your choice.

Jackson Products

31739 Mound Road, Warren, Michigan
Sold through Welding Supply and Safety Dealers

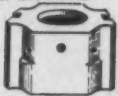
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DEPENDABLE SEMI-STEEL PILE HAMMERS



PILE DRIVER HAMMERS

Well designed of tough close grained semi-steel to give maximum impact for easy reeving. Can be adapted to fit present leads. Fast service in sizes 2000 lbs. to 4000 lbs. in 250 lb. increments.



FOLLOW BLOCKS

Sturdy semi-steel. Quick delivery on all sizes for hammers weighing 2000 lbs. to 4000 lbs.

SWINGING LEADS One Section All-Steel

Lengths 20' 25' 30' 35' 40'

Maintain your pile drivers at top efficiency with this low cost replacement equipment.

Sioux City Foundry & Boiler Co.

East 8th & Division SIOUX CITY 2, IOWA Phone 5-7987

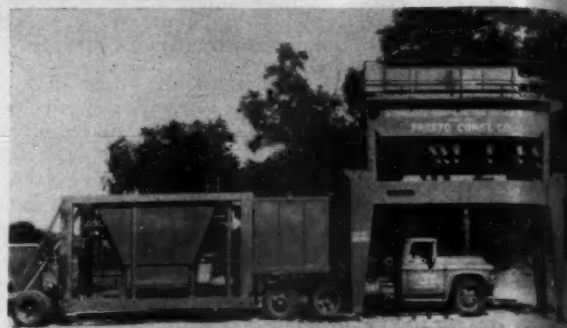
For more facts, use Request Card at page 18 and circle No. 291

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Low Factory Prices!

Product Parade



Once the Model S-E plant has lifted itself up through the use of its self-erecting power device, the mobile dryer, along with the twin portable dust collector, is wheeled into position. The storage tanks, mobile furnace, hot-oil heater, generator, and other components are then positioned, and the plant is ready to produce hot-mix.

Portable asphalt plant needs no crane for setup

A new "self-erecting" portable asphalt plant is announced by the Standard Steel Corp.

Designated Model S-E, the unit is offered in batch capacities of 4,000, 5,000, and 6,000 pounds. It can be set up and made ready for operation in as short a time as 2 or 3 days, according to the manufacturer.

To set up, the mobile mixing unit is pulled directly under the hoist section. The plant then lifts itself up through the use of the self-erecting power device.

For further information write to the Standard Steel Corp., Dept. C&E, 5087 S. Boyle Ave., Los Angeles, Calif., or use the Request Card at page 18, Circle No. 19.

Cleats for truck wheels aid in mud, snow, ice

Emergency traction cleats for truck wheels are announced by Palmer Industries, Inc.

Called Truck-Out, the cleats are said to fit all standard-make dual wheels and can be installed and removed in a matter of seconds.



metal-reinforced nylon bag slides easily between the tires; it is then inflated with about two pounds of air (taken from any of the rear tires) to the same pressure as the outer tire, by means of a 4-foot hose with special gage and attachments. Within a few seconds, the manufacturer states, the bag equalizes itself with the tire, and is thus tightly locked in place.

For further information write to Palmer Industries, Inc., Dept. C&E, 846 W. 56th St., Indianapolis, Ind., or use the Request Card at page 18, Circle No. 43.



"Lime saved the day . . . no question about it!"

. . . says Ed Kreusel, project manager for H. B. Zachry's \$9½ million Bergstrom A.F.B. project at Austin, Texas (Job of U.S. Army Engineers, Galveston District). The world's largest lime stabilization job, it involves over 1¼ million sq. yds. of runways for jet bombers.

"Prior to stabilizing the clay subgrade with hydrated lime, we were literally 'spinning our wheels'. We lost about five months' time due to heavy rains softening the base and subgrade courses, necessitating complete reconstruction—at high cost. After lime was specified, however, the job proceeded without delay, and the lost time was made up."

LIME STABILIZATION SPEEDS "SACK" AIRBASE JOB in spite of record rainfall



Pulvimixer mixing hydrated lime with heavy clay subgrade prior to compaction. 4% lime was used in stabilizing subgrade under rigid and flexible pavements.



Windrowed sand-gravel subbase material placed on top of completed lime-stabilized subgrade.

Lime expedited construction at Bergstrom by

- ① Reducing soil plasticity and shrinkage sharply.
- ② Forming a water-resistant subgrade barrier.
- ③ Increasing subgrade strength and stability many fold.

As a result, the highly plastic in-place clay was transformed into an excellent working table, permitting base and paving operations to proceed quickly, in spite of continuing high rainfall.

Impressed with lime's performance, H. B. Zachry also stabilized 5 miles of haulage roads for heavy vehicles at his own expense. This enabled haulage operations to continue the next day after rains.

Lime stabilization has also proven to be a low cost method of upgrading granular materials used in base construction on all types of roads.

For further details on lime stabilization, or the Bergstrom project, write National Lime Association, 925 Fifteenth St., N. W., Washington 5, D. C.



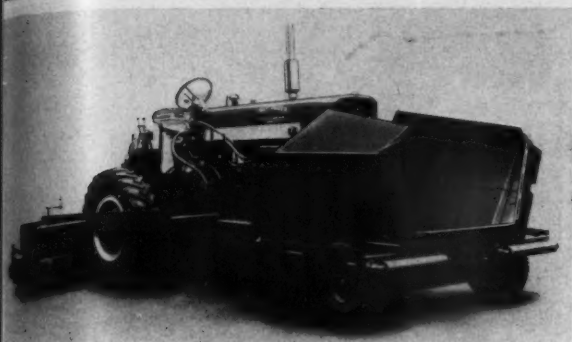
NATIONAL LIME ASSOCIATION

925 FIFTEENTH STREET, N. W., WASHINGTON 5, D. C.



Write for
FREE booklet

For more facts, use Request Card at page 18 and circle No. 292



An important improvement on the Trac-Paver Model 200 is the redesigned hopper with nearly double the carrying capacity of the previous model.

Improved blacktop paver hikes carrying capacity

The Trac-Machinery Corp. announces new features and improvements on the Model 200 blacktop paver.

Chief among these is a redesigned hopper that features larger carrying capacity and hydraulically operated folding sides to feed material to the center conveyor opening. The hopper is 10 feet wide in open position and 8 feet wide when raised or folded.

Other features on this Trac-Paver include increased power, provided by a new 6-cylinder engine rated at 59 horsepower at 1,800 rpm; increased traction, accomplished by moving the front wheels forward under the hopper, thus shifting more weight onto the rear drive wheels; and additional extensions, which permit a paving width of 12 feet.

For further information write to the Trac-Machinery Corp., Dept. C&E, Nunda, N. Y., or use the Request Card at page 18. Circle No. 60.

Hydraulic dynamometer is accurate, compact

A hydraulic dynamometer with a capacity rating from 0 to 5,000 pounds, and with a safety factor of 3:1, is available from Hydroway Scales, Inc.

Compact and ruggedly built, the 15-pound unit is 13 inches in length over all. The dial face is large enough for easy load reading, and minimum dial graduation is 25 pounds.

For further information write to Hydroway Scales Inc., Dept. C&E, P.O. Box 531 Oakridge Station, Royal Oak, Mich., or use the Request Card at page 18. Circle No. 91.



WINSLOW—PORTABLE TRUCK SCALE

THE CONTRACTORS' SPECIAL SCALE



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor

WINSLOW SCALE COMPANY

P.O. Box 1198
Terre Haute, Indiana

For more facts, use Request Card at page 18 and circle No. 293



Problem: How to channel the flow of this shallow, meandering creek? Standard round pipe would take too much headroom.



Solution: Wheeling Pipe Arch, a wider type of metal pipe. It does not require additional grading to provide sufficient covering for the pipe.

Headroom limited?

Use Wheeling Pipe Arch for fast drainage!

Particularly effective for shallow streams, Wheeling Pipe Arch assures fast, efficient water flow. That's because it has a wide, comparatively flat base that permits more rapid drainage than round pipe of equal area. And it has the same toughness and durability that made other types of Wheeling Culverts famous.

Wheeling Metal Culvert Pipe or Pipe Arch, in copper-bearing steel or

copper-bearing pure iron, plain galvanized or bituminous coated (with or without paved invert) is available in a wide range of gauges and diameters to solve any drainage problem.

Contact your nearest Wheeling warehouse, culvert plant, or sales office. Wheeling Corrugating Company, Wheeling, West Virginia.



WHEELING CORRUGATING COMPANY—IT'S WHEELING STEEL

WHEELING WAREHOUSES, SALES OFFICES OR CULVERT PLANTS ARE IN: Atlanta Boston Buffalo Chicago Columbus Des Moines Detroit Houston Kansas City Louisville Madison Martins Ferry Minneapolis New Orleans New York Peoria Philadelphia Richmond St. Louis.

For more facts, use Request Card at page 18 and circle No. 294

Product Parade

Big earth-boring machine is dual-purpose unit

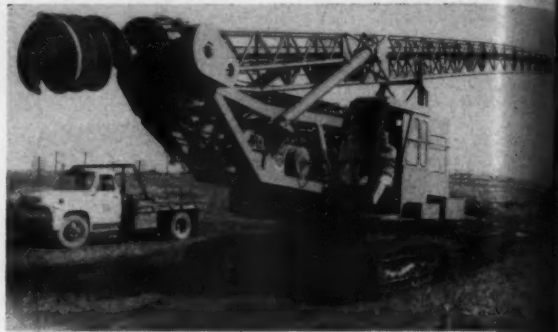
For drilled-caisson-type foundation work, the Hugh B. Williams Mfg. Co. offers a digger designed to incorporate the desirability of a crane-accessory drilling rig with the advantages of a truck-mounted unit.

Capable of augering holes up to 8 feet in diameter to a maximum depth of 60 feet, the Model LLDH is mounted on a Lima Model 44 crane.

The new unit offers such features as high and low-speed rotary clutches

for ease of operation; eight forward auger speeds and four reverse; dual facilities for hoisting and extending the kelly bar; friction clutches to insure high-speed in-and-out operation; and hydraulic pressure for slow, powerful movement.

For further information write to the Hugh B. Williams Mfg. Co., Dept. C&E, P. O. Box 7815, Dallas 26, Texas, or use the Request Card at page 18. Circle No. 15.



The Model LLDH is designed to auger holes up to 8 feet in diameter to a maximum depth of 60 feet.

Joint-matching attachment for bituminous paver

A new hydraulically operated, automatic joint-matching attachment for use with its PF-90 bituminous paver finisher is available from the Blaw-Knox Co.

According to the manufacturer, the fully automatic attachment provides high quality for multiple-lane joints, and eliminates continual observation and adjustment from the former manual screed adjusting mechanism.

Thickness of a bituminous course is matched by the attachment to elevation of a previously laid adjacent lane.

The unit is designed for mounting



A tracking mechanism suspends from the joint-matching attachment and travels on a previously paved surface. This mechanism actuates a 4-way hydraulic valve, which controls screed-arm position through a 2-way hydraulic cylinder.

to either left or right screed arms of the paver finisher, connecting to the machine's hydraulic system with quick-change couplings.

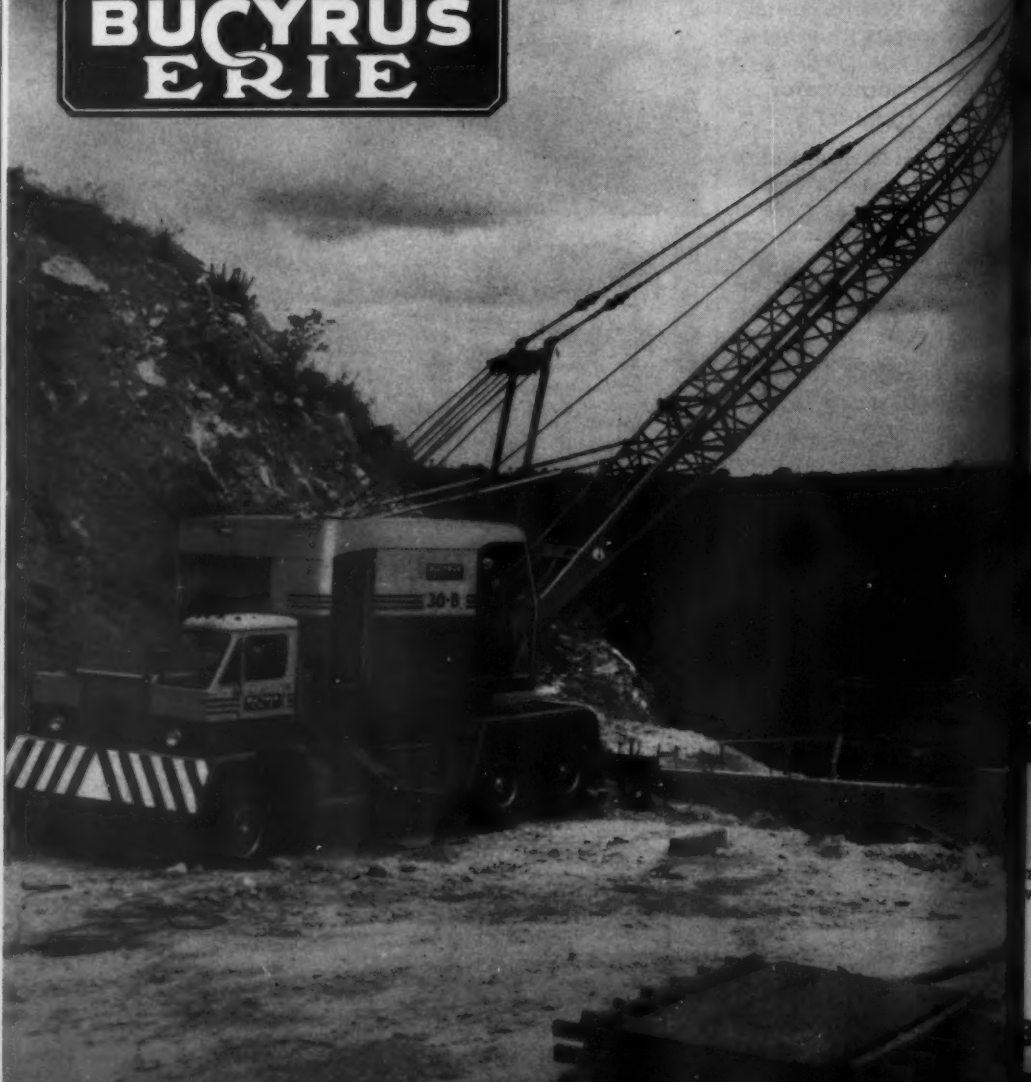
A tracking mechanism suspends from the attachment and travels on a previously paved surface. This mechanism actuates a 4-way hydraulic valve, which controls screed-arm position through a 2-way hydraulic cylinder.

For further information write to the Blaw-Knox Co., Dept. C&E, P. O. Box 1198, Pittsburgh, Pa., or use the Request Card at page 18. Circle No. 37.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

NEW

BUCYRUS ERIE





A grading and digging bucket is now available for the Hy-Hoe hydraulic backhoe. This new bucket can be reversed to be used as a front-end loader. The Hy-Hoe backhoe can be mounted to any single or tandem-axle 2½-ton truck; it has an extended reach of 23 feet in all directions, a digging depth of 14 feet, and a dumping height of 12 feet 8 inches. For further information write to the Hydraulic Machinery Co., Dept. C&E, 4685 W. Electric Ave., Milwaukee 46, Wis., or use the Request Card at page 18. Circle No. 121.

45-TON CAPACITY

30-B transit crane

Here's the big, new Bucyrus-Erie 30-B Transit Crane — designed to give you the *best* lifting crane in its class plus the tops in digging advantages as a 1-yd. hoe, shovel, dragline or clamshell. It's loaded with profit-boosting, cost-cutting improvements:

INCREASED LOAD CAPACITY AT GREATER RADIUS— With a 40-ft. boom, the 45-ton maximum allowable load can be lifted at radius of 15 feet.

NEW BOOM — The crane boom, fabricated of high-strength alloy steel, is designed with heavier chord angles and larger cross sections.

ANTI-FRICTION MOUNTING FOR POINT SHEAVES — Point sheaves are mounted on pre-lubricated, sealed, anti-friction bearings.

AIR-OPERATED BOOM HOIST AND ENGINE MASTER CLUTCH have been added to the 30-B's already convenient, quick-response, air-control system.

ADJUSTABLE CONE ROLLERS provide proper clearance between rollers and roller path. Rollers are also fitted with long-life, heavy-duty bushings to handle the greater roller loads.

BIG, RUGGED, 6 x 4 or 8 x 4 CARRIER, specially designed and built for fully convertible crane-excavator service, is available with gas or diesel engine.



Rotary windshield wiper increases visibility

The Edward F. Taylor Co. announces the Clear View rotary windshield cleaner. The unit features a



circular safety-glass disk rotating at 2,400 rpm to throw off drenching rain, snow, steam or other vision-obstructing elements by centrifugal force. It may be permanently mounted in a standard windshield.

Where required—particularly for vehicles or installations subject to periods of non-use—a special heating device may be installed for de-icing.

Electric motors of 12 volts are available for driving the unit. A motor control switch is optional.

For further information write to the Edward F. Taylor Co., Dept. C&E, 1237 Shoshone St., Denver 4, Colo., or use the Request Card at page 18. Circle No. 22.

Two new photocopiers produce prints fast

Two new photocopy units, the Transcopy Star and Mercury, are announced by the Remington Rand Division of the Sperry Rand Corp.

According to the manufacturer, both units can be operated by inexperienced personnel and can produce



a copy in approximately 20 seconds.

The Star is designed to expose, develop, and print finished copies of originals up to 9½ inches wide and of any length. Its over-all dimensions are: length, 23 inches; width, 14 inches; height, 5 inches; and throat width, 9½ inches.

The Mercury has a throat width of 15½ inches, a 29-inch length, a 14-inch width, and a height of 5 inches.

For further information write to the Remington Rand Division, Sperry Rand Corp., Dept. C&E, 315 Fourth Ave., New York 10, N. Y., or use the Request Card at page 18. Circle No. 98.

For more facts, use coupon or circle No. 295

send in coupon

to get the complete story on how the new 30-B transit Crane adds up to the soundest equipment investment you can make TODAY.



Bulds Better Equipment

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Gentlemen:
I'd like more information on the new 30-B Transit Crane.

NAME.....

COMPANY.....

ADDRESS.....

CITY..... STATE.....



The S-300's sweeper can handle up to 6 inches of snow, throwing it 25 to 100 feet off the surface being cleared. The broom can be angled up to 35 degrees in either direction, even when in operation and traveling at 8 to 15 mph.

Ice, snow, sleet cleaner has hydraulic controls

A new piece of equipment for the removal of ice, packed snow, and sleet is available from the Lull Engineering Co.

Called Model S-300, it is used with 4-wheel-drive trucks, and includes a hydraulically controlled ice roller-crusher and ice blade mounted under the chassis of the truck, plus a 10-foot-wide 5-foot-diameter sweeper mounted ahead of the truck.

The roller-crushers consist of a series of free-rolling wobble-disks that bear down on the ice to fracture the frozen surface. An ice blade, mounted directly behind the roller-crushers, is hydraulically operated and can be angled up to 25 degrees in either direction so that cleaning can be done in the same direction on the back pass.

Electric solenoid controls actuate all movements; the fingertip control panel is mounted within easy reach of the operator.

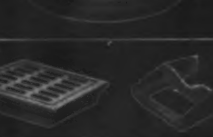
For further information write to the Lull Engineering Co., Dept. C&E, 3045 Highway 13, St. Paul, Minn., or use the Request Card at page 18. Circle No. 101.

For more data on any item, circle indicated number on card at page 18.



CONSTRUCTION CASTINGS OF

- ★ SOUND QUALITY
 - ★ SUPERIOR FINISH
 - ★ SOLID VALUE
- DELIVERED ON TIME

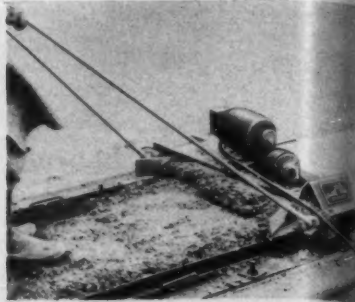


Patterns on hand for over 15,000 different Gray Iron and Ductile Iron construction castings.

Write for our new 165-page completely illustrated catalog.

NEENAH
FOUNDRY COMPANY
NEENAH • WISCONSIN

For more facts, circle No. 296



Shown here finishing a conventional precast channel section, this Thor Model FSM-4 is one of two new vibratory finishing screeds available from the Construction Equipment Division of the Thor Power Tool Co. The FSM-4 is 4 feet long.

Another model, the FSM-6, is 6 feet long. Both screeds have the firm's "beam" steel-strapping vibratory design, and are powered by electric motors. They can vibrate, compact, and level conventional channel, double-tee and precast sections in one operation. For further information write to the Construction Equipment Division, Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, Ill., or use the Request Card at page 18. Circle No. 41.

MAXIMUM COMPACTION!



1. Granular Base Materials

2. Bituminous Surfacing

MANY USES! The handiest machine you ever used for tamping, compacting, and smoothing sand, gravel, soil, cinders, chips, cement and soil mixtures, and asphalt surfacing. Use it in restricted areas, close to walls, for patch jobs, leveling footings, smoothing fill and countless other places!

QUALITY CONSTRUCTION—Definitely superior value. Tough, rugged, dependable, yet precision-built.

ECONOMICAL—Low initial cost; low operating cost. ORDER YOUR VIBRA-TAMP NOW. Send for Catalog No. 630.

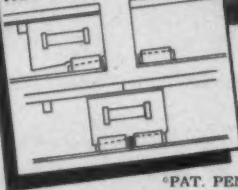
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BARCO MANUFACTURING CO.
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For more facts, use Request Card at page 18 and circle No. 297



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WEDGE-LOK
Here's How it Works:



*PAT. PEND.

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CLARK WEDGE-LOK
PAYING FORMS

No deflection at the joint during load transfer

NOW! form setting time reduced to a minimum with Clark Wedge-Lok* the exclusive method of form joint.

See your local dealer for the complete Clark line of construction equipment.

construction equipment division
375 EAST FIFTH AVENUE • COLUMBUS 1, OHIO
DIVISION OF CLARK GRAVE VAULT CO.

CONTRACTORS AND ENGINEERS

New cabs announced for wheel-type tractors

Crenlo, Inc., offers five new cabs designed expressly for the newest Caterpillar wheel-type tractors, including the DW21, DW20, and DW15.

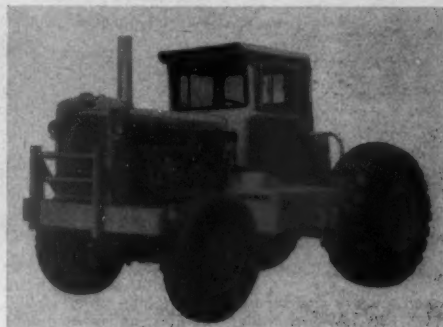
Both standard and heavy-duty cabs are available for the DW21 and DW20. The standard is built from 12 and 16-gage material, while the Super has many heavier sections including 1/4-inch steel-plate roof and 3/16-inch rear panel for extra protection from falling objects.

All cabs have shatterproof glass

windows, which are designed to provide maximum visibility. Windshields have reverse slopes to minimize dust collection on glass. Doors have roll-down windows and no-draft ventilators.

The cabs may be installed or removed quickly, according to the manufacturer.

For further information write to Crenlo, Inc., Dept. C&E, 1600 Fourth Ave. N. W., Rochester, Minn., or use the card at page 18. Circle No. 68.



This standard Crenlo cab for the Caterpillar DW20 tractor is one of the five units offered by the company. Cabs are also available for the DW15 and DW21.

it's EXTRA

KOTAL

BITUMINOUS STOCKPILE MIXES

LAST!

SPECIFIED IN MANY AREAS FOR:

- Maintenance
- Driveways
- Parking Lots
- Streets
- Station Platforms
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- Playgrounds
- Other Paving Requirements

KOTAL

For more facts, use Request Card at page 18 and circle No. 299

New 750-watt generator for general power use

A 750-watt electric generating plant is announced by Jeta, Inc.

The new unit is a 4-pole-generator,



single-phase 60-cycle 115-volt ac plant with a speed of 1,800 rpm.

Completely portable, the generator is for general power use.

For further information write to Jeta, Inc., Dept. C&E, 957 Saw Mill River Road, Yonkers, N. Y., or use the Request Card at page 18. Circle No. 39.

THESE LUBRICANTS HAVE KEPT OUR MAINTENANCE AT A MINIMUM



says: PIOMBO CONSTRUCTION CO. of San Carlos, California

"We have used LUBRIPLATE #107 in Track Roll Bearings, LUBRIPLATE #3 in Rock Drills, LUBRIPLATE #70 in Wheel Bearings and LUBRIPLATE 130A and LUBRIPLATE Gear Shield Heavy on our Shovels for the past twenty years. Our experience has been that LUBRIPLATE Lubricants have kept our lubrication and maintenance costs at a minimum. We highly recommend their use in construction and mobile equipment."

G. J. Giampoli, Shop Superintendent

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose... LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

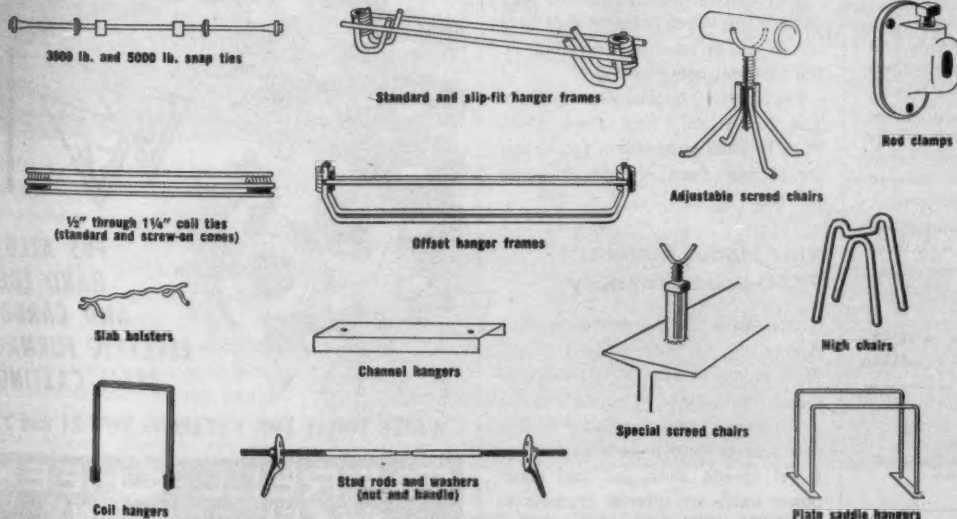


For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



For more facts, circle No. 301

Pick SURE-GRIP accessories for better concrete forming on bridges



One dependable source for all concrete forming accessories needed on bridge superstructures and substructures. Our forming engi-

neers will gladly help plan your forming requirements and lay-outs. Complete information and free catalog available on request.

The Dayton SURE-GRIP and Shore Co., 111 Kercher St., Miamisburg, Ohio

For more facts, use Request Card at page 18 and circle No. 300



Designed to carry crawler tractors weighing up to 13,000 pounds, the No. 130 low-bed trailer features an independent rubber-mounted wheel suspension system. The loading ramp also serves as the unit's tail gate.

Low-bed trailer features 13,000-pound capacity

The International Harvester Co. announces a 13,000-pound-rated-capacity, 6-wheel low-bed trailer with independent rubber-mounted wheel suspension for heavy-duty hauling.

Known as No. 130, the unit features rubber-mounted torsion axles, which act as a combination spring and shock absorber and work equally well whether the vehicle is loaded or empty. Independent oscillation of each wheel permits smooth movement of the trailer when pulled over rough terrain or at normal highway speeds, the manufacturer states.

A ramp for one-man loading and

unloading operations also serves as the unit's tail gate. A jack built into the hitch allows the trailer to be loaded when the towing vehicle is disconnected and facilitates connection of the two.

Over-all width of the No. 130 is 6 feet; over-all length, 21 feet. The bed width measures 77½ inches; bed length, 16 feet. The basic machine weighs 1,900 pounds.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 99.



Faster... with Rooshors ADJUSTABLE SHORES

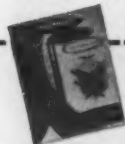
*the Key to Advanced Construction
Schedules...and More Profit*

This photograph is typical of jobs when Rooshors are used. Forms construction moves in progressive stages as shown due to the rapid erection of the forms made possible by the use of Rooshors. The basic fact is, of course, with Rooshors, construction schedules can be advanced with subsequent savings of time and labor.

Look closely at the picture again. The column form clamps are Roos Column Clamps. Here again, substantial savings are made in forms material and labor. Roos Column Clamps hold the forms rigid and square, are placed and removed quickly, require less forms materials than other methods.

Rooshors and Roos Column Clamps are designed with all the construction problems in mind. Check with us for more complete details on these fast, economical construction accessories. They are available nationally for rent or purchase.

BAKER-ROOS, Inc.
P. O. BOX 892 • INDIANAPOLIS 6, INDIANA



FREE
LITERATURE
Write for Bulletin
No. 259

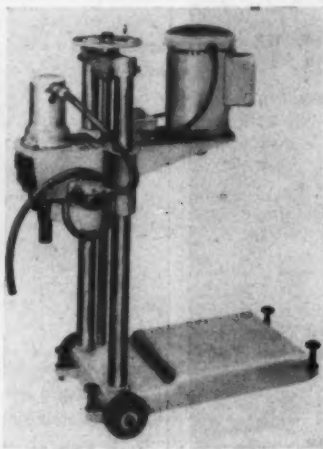
BAKER-ROOS, Inc. C&E
P. O. Box 892, Indianapolis 6, Indiana
Gentlemen: Send your literature on Rooshors and
Roos Column Clamps without obligation.

Name: _____
Organization: _____
Address: _____
City: _____ State: _____

For more facts, use coupon or circle No. 302

Portable drilling machine available in five models

The Model K Series diamond-bit drilling machines, said to permit drilling speeds up to 1 inch deep per



minute in reinforced concrete, granite, and other hard materials, are announced by The Kor-It Co., Inc.

The portable unit is offered in five models (for gasoline, electric, or air operation) with interchangeable motors. The electric models are 110/220-volt units offering 2 and 3 horsepower. The 4-hp air unit operates from any compressor with standard connection.

Threaded or slip-fit bits and barrels may be used. Diameters up to 9 inches can be effected, depending on the material being drilled.

For further information write to The Kor-It Co., Inc., Dept. C&E, P. O. Box 14, Jenkintown, Pa., or use the Request Card at page 18. Circle No. 85.

New loader features 9,000-pound capacity

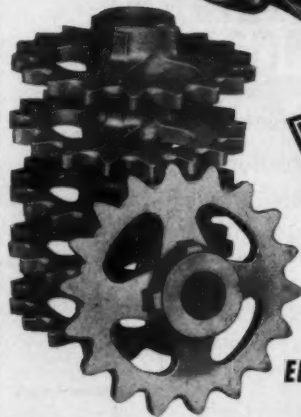
The Frank G. Hough Co. has announced a new rubber-tire 4-wheel-drive Payloader, the Model H-90, to replace the former HO model.

The load-carrying capacity of this new unit is 9,000 pounds at average travel speeds. Both gas and diesel power units are offered. Buckets to handle materials of various weights within the recommended carry capacity are available in sizes from 1½ to 5 cubic yards.

An important feature of this new

FARRELL-CHEEK ELEVATING and CONVEYING PARTS

*... for Outstanding
Performance Under the Most
Severe Conditions*



**F&S ALLOY,
HARD EDGE
AND CARBON
ELECTRIC FURNACE
STEEL CASTINGS**

WRITE TODAY FOR CATALOGS NOS. 21 and 23

**FARRELL-CHEEK
STEEL COMPANY**
SANDUSKY, OHIO, U.S.A.

BUCKETS • SPROCKETS • CHAIN • WHEELS • GEARS • SHEAVES • CABLE
FITTINGS • BAR BENDERS, CUTTERS • R. R. CASTINGS • FIRE TOOLS, ETC.

For more facts, circle No. 303

CONTRACTORS and ENGINEERS



The new Model H-90 Payloader, rated at 9,000 pounds carrying capacity, replaces the Model HO.

model is the "low-profile" front shroud, which gives the operator improved visibility.

The H-90 Payloader has a breakout force of 21,000 pounds and a bucket tipback of 44 degrees at ground level. Like its predecessor, the new model has torque-converter drive, power-shift transmission, and new heavy-duty planetary axles.

A cartridge-type oil filter has been built into the hydraulic reservoir of the H-90. Power-transfer differentials automatically transfer up to 24 per cent more torque to the wheels. Improved steering results from the use of twin steering-booster cylinders. The H-90 has power-assisted brakes on all four wheels, and sealed front brakes.

For further information write to The Frank G. Hough Co., Dept. C&E, 763 Seventh St., Libertyville, Ill., or use the Request Card at page 18. Circle No. 120.

New-model welding torch is completely mechanized

The Model Q-3 automatic torch is announced by the Arcair Co. Like other Arcair torches, it uses an electric arc to melt metal, while simultaneously a jet of compressed air blows the molten metal away.

One of the uses of Arcair torches is to prepare joints for welding. The unit consists of a head with an electrode feed mechanism that feeds consumable copper-coated carbon-graphite electrodes as required and



supplies a jet of air at the proper location.

The head is mounted on a tractor permitting straight-line or circular travel at predetermined speed. Where work is positioned, the Q-3 head can be removed from the tractor and mounted on the positioning equipment in the same manner as an automatic welding head. It will handle Copperclad Arcair electrodes from 3/16 to 3/8-inch diameter inclusive, and the tractor has a speed range of 0 to 180 inches per minute.

For further information write to the Arcair Co., Dept. C&E, Dept. 100, 433 S. Mt. Pleasant Ave., Lancaster, Ohio, or use the Request Card at page 18. Circle No. 29.

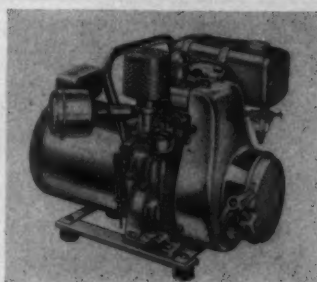
New line of generators is portable, electric

The Milwaukee Electric Tool Corp. announces a new line of direct-coupled gasoline-engine-driven portable electric generators.

These heavy-duty units feature manual or electric starting and output ratings ranging from 750 to 3,500 watts, at 120 volts, 60-cycle ac.

The engine is a 4-cycle 4-hp unit.

For further information write to the Milwaukee Electric Tool Corp., Dept. C&E, 5316 W. State St., Mil-



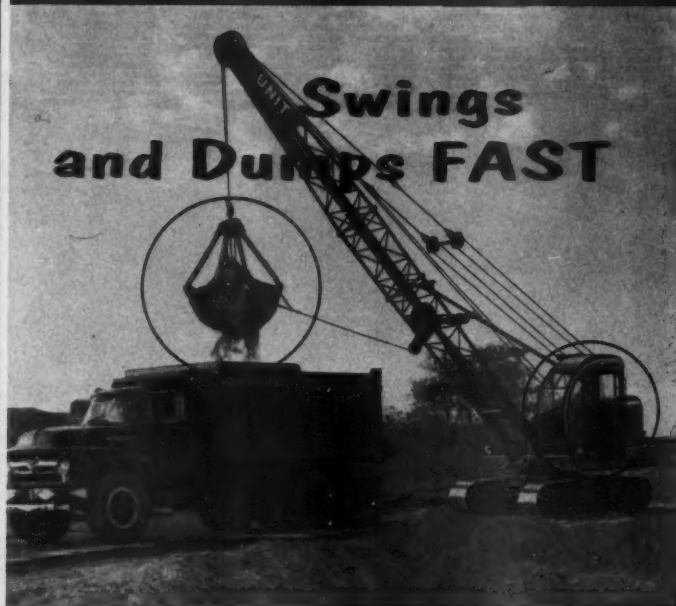
waukee 8, Wis., or use the Request Card at page 18. Circle No. 16.



takes a big bite!



Swings and Dumps FAST



AB-5025

Operator can SEE what he's doing at all times!

• Here is one of many contractors who prefer the UNIT 513C Challenger for handling bulk material. The pictures show the machine removing and loading used carbide slacks from the pit of a large chemical plant. Equipped with 1/2 yard clamshell bucket, the 513C takes a big bite, swings and dumps fast. Output averages about 30 yards per hour. Hydraulic clutches, and easy-to-reach levers, simplify the machine operation. And the safety-promoting FULL VISION CAB enables the operator to SEE what he is doing at all times. Get all the facts. Write for Bulletin.

UNIT CRANE & SHOVEL CORP.

6309 W. Burnham St., Milwaukee 19, Wis., U.S.A.

For more facts, use Request Card at page 18 and circle No. 304



Said to cut assembly and erection time in structural-steel applications, high-tensile Huckbolt fasteners are used on the addition to the Huck Mfg. Co.'s plant in Detroit. Installed with power tools, these threadless lockbolts are designed to replace hot rivets or high-tensile-bolts. To fabricate the building's 30-inch X 30-foot steel girders, as well as join them to the upright steel columns, lockbolts of 3/4-inch diameter were used. For further information write to the Huck Mfg. Co., Dept. C&E, 2480 Bellevue Ave., Detroit 7, Mich., or use the Request Card at page 18. Circle No. 97.



Versatile dozer-grubber penetrates to 14 inches

A new dozer-grubber is offered by the Williams & Hussey Machine Corp. Designed for dozers such as the International Harvester TD-6 and TD-9, Caterpillar D2 and D4, Allis-Chalmers HD-6, John Deere, and other makes of similar sizes, the attachment is readily installed on or removed from dozer blades and does not interfere with regular blade use. Another reported feature is reversible teeth of high-alloy steel to provide long service.

The standard unit is 92 inches wide and has five teeth that may be spaced at any interval desired. More teeth may be added to the attachment, or it may be used with but a single tooth, depending upon the operation. Maximum penetration is 14 inches.

Initial assembly is said to take about 2 to 3 hours; disassembly less than 1/2 hour; reassembly less than 1 hour.

For further information write to the Williams & Hussey Machine Corp., Dept. C&E, 21 Clinton St., Milford, N. H., or use the Request Card at page 18. Circle No. 82.

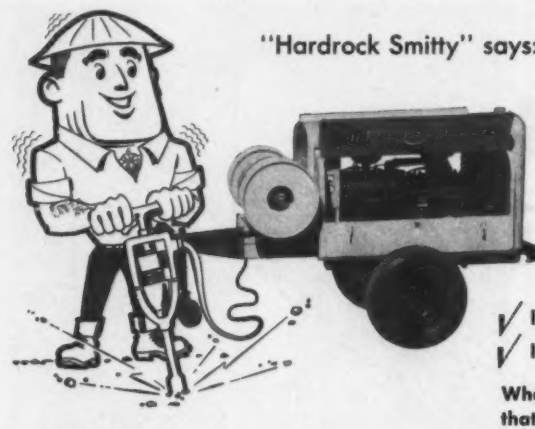
Spreader offers infinite width adjustability

A new concrete spreader is announced by The Jaeger Machine Co. Called Type JSX, the unit is said to provide infinitely adjustable self-widening, plus a diagonally adjustable finishing screed that lays material uphill as needed on increasing and decreasing curve elevations and compacts it solidly against the higher form.

All operations—traction, spreading screws, screed, and machine-width changes—are powered by gear-type hydraulic motors, under finger-touch lever control.

The strike-off plate is adjustable to strike off as much as 5 inches below forms for the base course. For the top course, the strike-off is adjustable to 6 inches above forms, and is followed by a 12-inch oscillating screed that completes the precision strike-off and finish.

Infinite width adjustability from 12 to 18 feet is provided by hydraulic (Continued on page 116)



"Hardrock Smitty" says:

BEFORE YOU BUY ANY COMPRESSOR CHECK THE SMITH 125 FOR EFFICIENCY AND ECONOMY

Check—

- ✓ low initial cost
- ✓ low operating cost

- ✓ easy maintenance
- ✓ simple compact design
- ✓ 12 volt electrical system
- ✓ 125 cfm at 1165 RPM

When you do, you'll agree with "Hardrock Smitty" that you can't buy better than Smith.

Model 125P.

- 6 cylinder Hercules Industrial engine
- 3 cylinders for compression, 3 cylinders for power. 95% of all moving parts available from your nearest industrial engine dealer.
- Operates two 85 lb. paving breakers at the same time.

Write us for complete information and the name of your nearest dealer.

Ask your dealer for an "on the job" demonstration.

SMITH

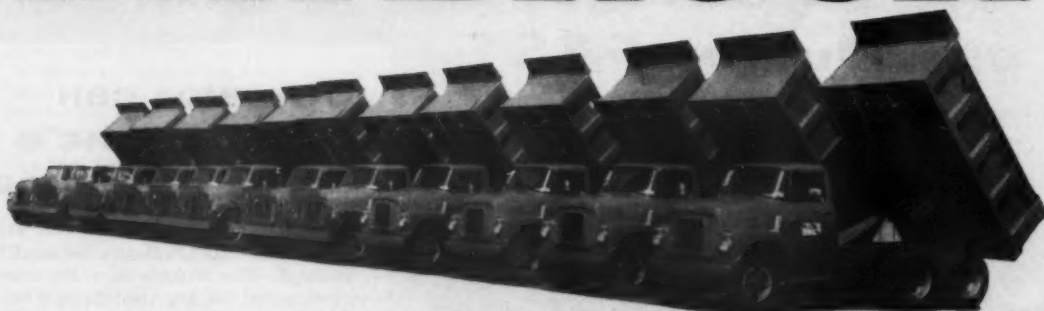
AIR COMPRESSORS

SMITH

GORDON SMITH & COMPANY, INC., Bowling Green, Ky.

For more facts, use Request Card at page 18 and circle No. 305

DAYBROOK



12 of a fleet of 25 trucks equipped with
DAYBROOK SERIES 1030 DUMP BODIES
DAYBROOK SERIES 7B132 Speedlift HOISTS
for FAST HEAVY DUTY HAULING

Bodies are Daybrook's contractor style with "box" type side braces and special safety design "dirt free" sloping running boards and horizontal members of tailgate. Hoists are single cylinder arm lift type . . . the sealed cylinder protected by Daybrook's one-year warranty.

DAYBROOK Team Work PAYS OFF! One truck or a fleet . . . when you "team-up" dependable Daybrook Steel or Aluminum Dump Bodies with Daybrook underbody or Telescopic Hoists you have "one" responsibility . . . all Daybrook.

Write for . . .

- ☐

DUMP BODY BROADSIDE—17 series bodies for light, medium and heavy duty

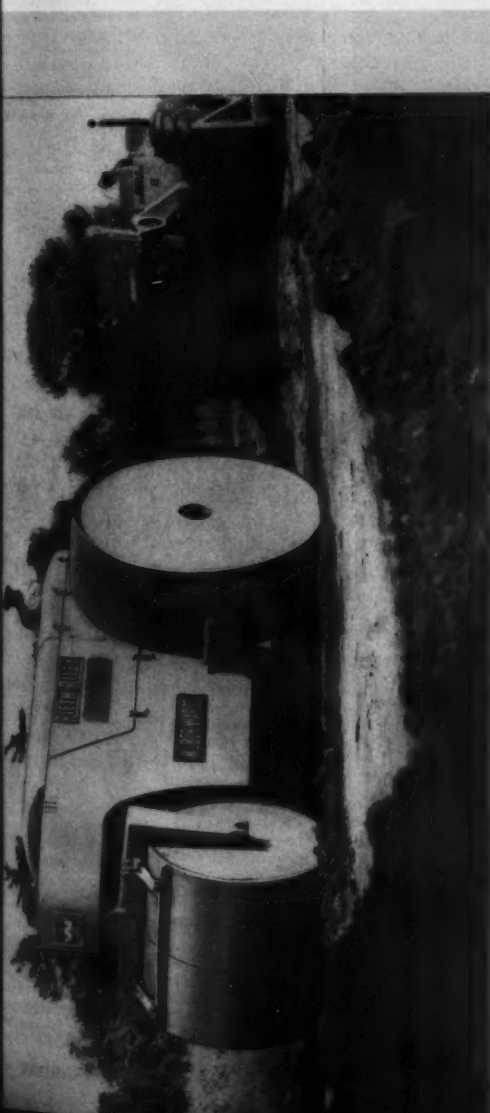
HOIST BROADSIDE—12 series conventional direct and arm lift type hoists

3 series telescopic type hoists



DAYBROOK HYDRAULIC DIVISION • YOUNG SPRING & WIRE CORPORATION • BOWLING GREEN, OHIO

Write for more facts



A Huber-Warco 3-wheel roller compacting on earth fill on a Reith-Riley job near Richmond, Indiana.

H-W helps Reith-Riley

Throughout Indiana and Southern Michigan, the name Reith-Riley is BIG in construction. In order to stay close to this busy construction area, Reith-Riley Construction Company, Inc., has set up a network of offices, each staffed with competent construction personnel.

Control point for this network is the company's main office at Goshen, Indiana. Branch offices are located in South Bend, Elkhart and Walcottville, Indiana, and Battle Creek, Michigan. A fleet of construction units is assigned to each office for greatest efficiency in handling projects.

An important part of this fleet is fifteen tandems, seven 3-wheel rollers and three maintainers, all products of Huber-Warco Company.

In 1925, Reith-Riley purchased their first Huber roller and during the 33 years to follow, they have purchased a total of 30 Huber-Warco units. These H-W units have been major factors for Reith-Riley in the compaction of millions of yards of earth and stone, and several million tons of asphalt.

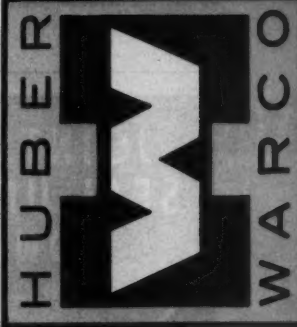
From the job sites . . . South Bend, Crawfordsville and Richmond, Indiana; Battle Creek and Hartford, Michigan . . . the general consensus is, "Huber-Warco's are hardy, de-

For 33 years, Reith-Riley Construction Company, Inc., of Goshen, Indiana, has been a customer of Huber-Warco. We're proud of this long association.

pave the way

pendable machines, and we've been able to operate them with very little maintenance." Just as Huber-Warco equipment has played an important part in Reith-Riley operations, this same efficiency and dependability can also be important to the operations of your company.

Your Huber-Warco distributor would like to show you the profit-producing features of Huber-Warco motor graders, tandem and 3-wheel rollers and the maintainer. A demonstration is proof-positive of product performance.



MOTOR GRADERS



TANDEM ROLLERS



3-WHEEL ROLLERS



MAINTAINERS

Terms up to 36 months and rentals available . . . contact your Huber-Warco distributor.

Huber-Warco Company

MARION, OHIO

For more facts, see Request Card at page 16 and circle No. 307



At Hartford, Michigan, two H-W tandems compact the wearing course on a section of Route 12.



A Huber-Warco 3.5 ton tandem compacts a hospital emergency entrance and parking lot in South Bend.



These H-W tandems are compacting the binder course on a highway near Crawfordsville, Indiana.

(Continued from page 116)

rams extending the telescopic machine 3 feet on each side. Width changes, in or out, can be made without stopping while moving in forward or reverse on flared-width forms. The spreading screws also extend hydraulically to 18 feet. Screw flight extensions can be quickly attached for wider work.

For further information write to The Jaeger Machine Co., Dept. C&E, 625 W. Spring St., Columbus, Ohio, or use the Request Card at page 18. Circle No. 62.

The new Jaeger Type JSX concrete spreader is said to be especially useful for designs with flared and offset widths, as well as variously crowned, pitched, and superelevated slabs.



JOINTS MAINTAIN THEIR SEAL UNDER ALL WEATHER CONDITIONS WITH...

SEALTIGHT

RUBBER-ASPHALT JOINT SEAL

SEALTIGHT rubberized-asphalt compounds provide the ideal sealer for years of economical, trouble-free joints in concrete construction. They feature high resilient and adhesive properties and are able to maintain a bond at below zero temperatures. Will provide a positive seal in all types of monolithic construction. Designed for use with non-extruding type fibre expansion joints.

SEALTIGHT

PRODUCTS

- EXPANSION JOINTS... Asphalt, Fibre, Cork and Sponge Rubber.
- TONGUE AND GROOVE Center Strip.
- Hot and Cold Rubber Asphalt Joint Seal.
- Hot and Cold JFR Rubber Asphalt Joint Seal.
- Air Entraining Agents.
- Curing Compounds.
- Curb and Gutter Sections.
- "PREMOULDED MEMBRANE" Vapor Seal.
- "HYDROJOINT" PVC Waterstops.
- "HYDROMAT" Asphalt Liners.

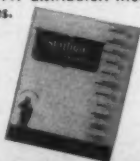
RUBBER-ASPHALT JOINT SEAL compound available in both hot-pour and cold-applied types. SEALTIGHT Hot-Pour Rubber-Asphalt meets Federal Specifications SS-S-164 and CAA Specification P-605...SEALTIGHT Cold-Applied Rubber-Asphalt meets Federal Specification SS-S-159 and CAA Specification P-615. Both are ideal for use in the joints of concrete streets, highways, bridges, etc.

JFR RUBBER-ASPHALT JOINT SEAL is recommended for sealing concrete runways where resistance to jet fuel is necessary. Available in Hot-Pour Type to meet Federal Specification SS-S-00167 and Cold-Applied Type that meets Federal Specification SS-S-00170. Easy and economical to apply.

TONGUE AND GROOVE Joint, used primarily as a longitudinal joint, provides a "keyed joint" that assures maximum efficiency in load transmission... helps to prevent blow-ups, spalling and controls cracking. Completely waterproof... produced from asphalt hardboard... is rigid, easy to handle and install, will not extrude. More economical and safer than steel center strips and will not rust away. Approved by Federal, State and Local engineering authorities.

EXPANSION JOINTS specifically designed to meet the needs of modern, properly-designed, properly-jointed construction projects. All types including Asphalt, Fibre, Sponge Rubber, Standard Cork, and Self-Expanding Cork joints available from "stock" at your local SEALTIGHT distributor. Meet Federal and State specifications.

Write today for complete information on the above products plus information about the many other top-quality SEALTIGHT products for highway construction... ask for the "PAVING PRODUCTS" Catalog.



W. R. MEADOWS, INC.

13 KIMBALL ST. • ELGIN, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 308

For more data on any item, circle indicated number on card at page 18.

Bronze-alloy housing for sump-pump motor

The Lancaster Pump & Mfg. Co., Inc., announces a new submersible sump pump equipped with an all-bronze-alloy motor housing. Said to be completely moistureproof, the case also actuates the automatic on-and-off switch.

The Lancaster Drain Pak is also available in cadmium-plated cast iron or all-bronze. Both models are equipped with a 1/2-hp 115-volt motor. The motor is also available as a 230-volt unit, and with a 3-wire cord set for ground connection.

Capacity of the unit is 3,100 gph against a 5-foot head; the maximum head is said to be 20 feet.

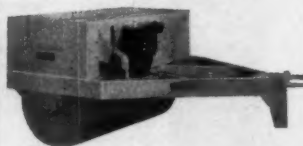
For further information write to the Lancaster Pump & Mfg. Co., Inc., Dept. C&E, P. O. Box 778, Lancaster, Pa., or use the Request Card at page 18. Circle No. 17.

WESTERN

ANNOUNCES A NEW

VIBRATORY ROLLER

THE LAST WORD IN COMPACTION



Look to **WESTERN** for the practical solution to your roller problems... and at the lowest possible cost.

Write Dept. CE 259

WESTERN EQUIPMENT DIV.
DOUGLAS MOTORS CORPORATION
1234 N. 62 St., Milwaukee 13, Wisconsin

For more facts, circle No. 309

CM

HOISTS

...choice of the wise buyer who compares



CM HOISTS AND PULLERS are ruggedly constructed to give you years of trouble-free service. Yet they are unusually light... easy to handle because they are constructed of the strongest alloys of steel and aluminum. Equipped with CM-Alloy flexible, alloy steel load chain.

- CM CYCLOPS**
- Capacities from 1 to 10 ton.
 - 1-ton model weighs only 36 pounds.
 - 96% efficiency—easy to operate.
 - Lifetime lubricated.



- CM PULLER**
- Capacities 1/2, 1 1/2, 3 and 6 ton.
 - 1/2-ton model weighs only 13 lbs.
 - Compact: stores in tool box.
 - Lifts or pulls at any angle.
 - Lifetime lubricated.

Write for catalog and name of your nearest CM dealer.



CHISHOLM-MOORE HOIST DIVISION
COLUMBUS McKINNON CHAIN CORPORATION
TONAWANDA, NEW YORK
REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND

In Canada: McKinnon Columbus Chain Limited, St. Catharines, Ontario

For more facts, circle No. 310

CONTRACTORS AND ENGINEERS

When clamshell operation is not desired, the Ross plant can be set up with a 65-foot X 24-inch conveyor with 3-yard feeder hopper and discharge chute.

Portable batching plant is overhead-type unit

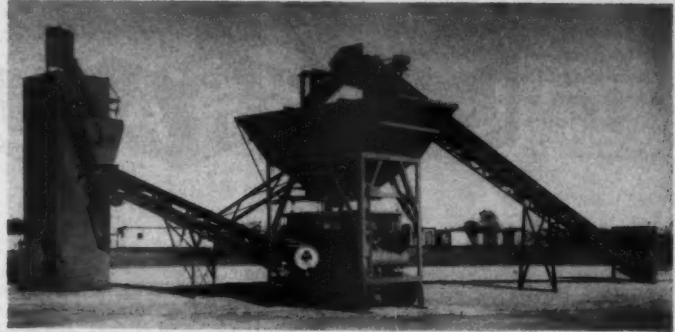
Ross & Son announces a new overhead batch plant.

The plant reportedly can be tied in with a bulk cement plant for one-man operation. Also, it can be set up with a 65-foot X 24-inch belt conveyor with a 3-yard feeder hopper and discharge chute when clamshell opera-

tion is not desired on a job.

The unit features folding sides and compartment partitions for legal highway travel on one axle.

For further information write to Ross & Son, Dept. C&E, Box 446, Brownwood, Texas, or use the Request Card at page 18. Circle No. 100.



Pneumatic-tire roller has all-wheel oscillation

Compaction of subbase, base, and finish (asphaltic concrete) courses of flexible-type pavements are a few of the job applications of Buffalo-Springfield's Model PSR-30 self-propelled pneumatic-tire roller. The manufacturer also recommends the new 10 to 30-ton 7-wheel unit for compaction of embankments for highways, airport runways, etc.

A special transmission, including torque converter, offers three speed ratios and an infinite range of rolling speeds up to 19.4 mph, forward and reverse.

Complete dual operating controls include automotive-type hydraulic-powered steering.



By varying the type and amount of ballast, wheel loads from 3,340 to 8,600 pounds per wheel can be obtained.

For further information write to the Buffalo-Springfield Roller Co., Dept. C&E, 1210 Kenton St., Springfield, Ohio, or use the Request Card at page 18. Circle No. 84.

Offer new steam cleaner for confined-area work

Designed for light to medium-duty steam cleaning in confined areas where fumes, smoke, flame, or excess water would be objectionable or hazardous, the all-electric Model E-350 Hypressure Jenny is announced by the Homestead Valve Mfg. Co.

The E-350 is offered with a choice of wiring for either 220 or 440-volt, 3-phase, 60-cycle ac. It has 7½-inch rubber-tire wheels and a drawbar for easy movement from job to job.

For further information write to the Homestead Valve Mfg. Co., Dept. C&E, P. O. Box 348, Coraopolis, Pa., or use the Request Card at page 18. Circle No. 48.

For more facts, circle No. 311→

Another EUCLID product improvement!

Donaldson dry-type air cleaner in TC-12 Crawler

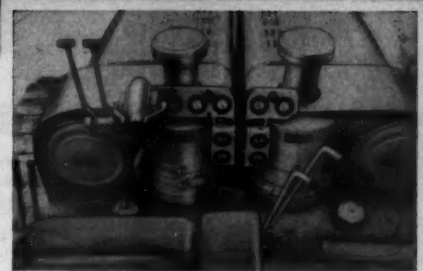


One of the reasons the new series Euclid TC-12 Crawler provides more work-ability with less downtime is the unequalled accessibility of all major components for quick, easy servicing.

As shown in the photograph, the two Donaldson dry-type air cleaners, one for each engine, are conveniently located for easy access. Both pre-cleaner and secondary filter can be serviced in a fraction of the time required for oil bath cleaners and there's no mess—just empty the pre-cleaner dust cup, clean and replace a paper element in the secondary cleaner.

HIGH EFFICIENCY CLEANER INCREASES ENGINE LIFE

The Euclid TC-12 Crawler is now being built with the Donaldson dry-type air cleaner as standard equipment. This 99.9% efficient cleaner reduces engine wear caused by dust—increases the service life of the engine and helps maintain top operating efficiency. Engine manufacturers say that 8 ounces of



abrasive dust can ruin an engine in a short time. Because of the tremendous volume of air that passes through an engine in a single shift, the importance of air cleaner efficiency is obvious. That's why Euclid uses this Donaldson cleaner on the new series TC-12... it's another example of constant product improvement that makes Euclid your best investment.

EUCLID Division of General Motors, Cleveland 17, Ohio



EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 11.

Joints in concrete structures—an informative, comprehensive booklet from the Serviced Products Corp., concerning the design, construction, and maintenance of expansion, contraction, and construction joints in concrete structures. Coverage includes detailed information on joint materials; specific design recommendations for seven different types of structures; and step-by-step construction procedures. Well illustrated with photographs and drawings.

Write to the Serviced Products Corp., Dept. C&E, 6051 W. 65th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 23.

Fir plywood—a booklet entitled "Fir Plywood for Today's Construction." Includes data on the physical properties of fir plywood; a chart of the characteristics and proper use of each grade of interior and exterior-type panel; a table of basic FHA requirements for plywood construction; and gluing and nailing recommendations. Design and use data for the various concrete forms also included.

Write to the Douglas Fir Plywood Association, Dept. C&E, 1119 "A" St., Tacoma 2, Wash., or use the Request Card at page 18. Circle No. 33.

Sweeping brushes—a folder describing Danline sweeping brushes with locked-in-place construction. Stresses such features as easy assembly, simplified storage, and minimum maintenance. Typical specifications included. Illustrated with photographs.

Write to the Newark Brush Co., Dept. C&E, 260 Michigan Ave., Kenilworth, N. J., or use the Request Card at page 18. Circle No. 53.

Lubricants—a booklet covering the wide variety of Lubriplate lubricants and giving data on their proper application to mechanical equipment. Contains a list of dealers located throughout the country.

Write to the Fiske Bros. Refining Co., Lubriplate Division, Dept. C&E, 129 Lockwood St., Newark 5, N. J., or use the Request Card at page 18. Circle No. 70.

Crawler tractors—a booklet containing a comprehensive discussion of the capabilities of large crawler tractors. Points up the uses of the Caterpillar D8 and D9 tractors in construction, pipeline, and railroad work. Brief specifications given for both machines. Text illustrated with

photographs and drawings. Form No. D841.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 106.

Watertight concrete—a folder discussing the design and specification of watertight concrete and pointing out how Pozzolith, a water-reducing additive, reduces permeability, shrinkage, bleeding, and segregation to produce structural concrete that is highly resistant to penetration of water.

Write to The Master Builders Co., Dept. C&E, 7016 Euclid Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 107.

Roller seals for tractors—literature on Sure-Seal roller and final drive seals for Caterpillar, Allis-Chalmers, and I-H tractors. Lists such features as special inner seal; heat-resistant leather facing; equal-pressure springs; flexible, oil-resistant bellows. Illustrated.

Write to the Sure-Seal Equipment Co., Dept. C&E, 1820 N. W. 25th Ave., Portland 10, Ore., or use the Request Card at page 18. Circle No. 55.

Steel building—a brochure describing how to erect quickly and efficiently the new standard steel building made by the Truscon Division of Republic Steel. Breaks down the procedure into 12 steps, and gives only erection sequence but specifies the tools and equipment required.

Write to the Truscon Division of Republic Steel Corp., Dept. C&E, Youngstown, Ohio, or use the Request Card at page 18. Circle No. 103.

Lightweight pipe—a condensed catalog covering the complete Naylor line of pipe, fittings, flanges, and connections. Includes standard specifications for Lockseam Spiralweld pipe in sizes from 4 to 30 inches in diameter; illustrated data on one-piece Wedglock couplings and other types of connections; standard fittings for lightweight pipe and welding flanges for Naylor pipe. Bulletin No. 59.

Write to the Naylor Pipe Co., Dept. C&E, 1230 E. 92nd St., Chicago 11, Ill., or use the Request Card at page 18. Circle No. 40.

Rubber-mounted cranes—a bulletin presenting the line of Koehring rubber-tire-mounted cranes, ranging in lifting capacity from 15 to 45 tons.

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For more facts, use Request Card at page 18 and circle No. 312



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For more facts, use Request Card at page 18 and circle No. 313

CONTRACTORS AND ENGINEERS

Photographs of each model are accompanied by descriptive commentary. Information on convertibility of each model for dragline, clamshell, or bucket work.

Write to the Koehring Co., Dept. C&E, 3026 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 116.

Attachments for tractors, graders—a catalog on attachments and accessories designed to increase the versatility and working capabilities of Allis-Chalmers crawler tractors and motor graders, as well as add to operator comfort and safety under normal or unusual working conditions. Text illustrated with photographs, drawings. Catalog MS-1189.

Write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 28.

Converter-transmission package—a booklet explaining the function of the Huber-Warco torque converter and power-shift transmission in the firm's 6-D and 7-D Series motor graders. Describes in detail the major benefits of this combination. Booklet HWG-564.

Write to Huber-Warco Co., Department C, Dept. C&E, Box 501, Marion, Ohio, or use the Request Card at page 18. Circle No. 71.

Versatile backhoe—a booklet on the Hopto snap-on-and-off backhoe. Illustrations show the ease with which this unit can be attached in a matter of seconds to either crawler or rubber-tire tractor. Photographic views of the Hopto backhoe at work on a variety of jobs.

Write to the Badger Division, The Warner & Swasey Co., Dept. C&E, 1123 W. Fifth St., Winona, Minn., or use the Request Card at page 18. Circle No. 81.

Steam cleaning—a catalog on John Bean liquid detergents and dry compounds for steam cleaning. Outlines five cleaners; also provides directions for proper mixing of the formulas, as well as general hints on applications in steam cleaning. Catalog L-1611.

Write to the Automotive Department, John Bean Division, Food Machinery & Chemical Corp. Dept. C&E, Box 840, Lansing 4, Mich., or use the Request Card at page 18. Circle No. 26.

Soil moisture meter—an illustrated bulletin on the Bouyoucos soil moisture meter. Explains what the moisture meter is, how it works, and how it benefits users.

Write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 12.

Construction trailers—literature describing Kens-Trailers for carrying construction equipment. Covers units of various sizes and capacities, six models in all. Illustrated, with specifications included.

Write to the Kensington Welding

& Trailer Co., Dept. C&E, 1114 Farmington Ave., Kensington, Conn., or use the Request Card at page 18. Circle No. 117.

Belt conveyors—a bulletin describing Western Machinery belt conveyors. Contains data on how to estimate conveyor requirements (including capacity charts), recommended belt speeds, horsepower requirements, maximum angles of inclination, and required conveyor lengths.

For further information write to the Western Machinery Co., Dept. C&E, 650 Fifth St., San Francisco 7,

To obtain the literature described on this page, write to the manufacturer or circle the designated number on the Request Card at page 18.

Calif., or use the Request Card at page 18. Circle No. 57.

Jacks, pumps—a catalog covering W-S independent pump hydraulic jacks, single and double-plunger hand

OLIVER



The OC-4 is ideal for dozens of jobs. It works perfectly with dozers and many other money-making attachments. It really gets around because it has more power and the highest ground clearance in its class. And there's a choice of four track gauges to meet your needs: 31", 42", 60" and 66".

The compact design of the OC-46 allows it to maneuver in and out of tight spots with ease. Long, 46"-wide tracks guarantee stability and positive traction. Side arms are rigidly mounted to the subframe to absorb shock and stress. Low loader arm mount and high seat give full visibility at all times. The OC-46 has a high dump and a long reach. Speed range, 1½ to 5¼ m.p.h.



Earn faster...with advanced "Spot-Turn" clutch steering on the OLIVER OC-4

With Oliver's advanced "Spot-Turn" clutch steering on the always dependable OC-4 crawler, you get smooth, almost effortless operation and the ultimate in easy maneuverability, safety, speed and comfort.

"Spot-Turn" clutch steering minimizes foot braking. Sharp turns or rightabout-faces are easily executed with a single-lever control that sets the automatic brakes at once! Pulling both levers (with one hand) stops the tractor instantly.

"Spot-Turn" helps you get any job done faster—with less fuel and muscle. Steering and control are always the same—on any grade, on smooth or rough terrain, with or without a load, pushing or pulling. Ask your Oliver distributor to demonstrate the OC-4 and OC-46 with advanced "Spot-Turn" clutch steering. Compare with others. See the difference.

The Oliver OC-4...the "most-for-your-money" crawler in its power class

The OC-4 is a compact, low-cost crawler offering the greatest value and performance in its class. And it's the only unit in its field giving you a choice of gasoline or diesel power.

This "little giant" offers more weight, a higher drawbar pull, perfect balance and the easiest control found in any crawler anywhere near its price. Every OC-4 has Oliver's exclusive "Spot-Turn" clutch steering and offers a selection of either "Travel-Reverser" or "Slo-Lo" auxiliary transmissions.

The Oliver OC-46...faster, better loading due to its factory-built, matched design

The OC-46 is a full-fledged, heavy-duty ¾-yd. loader—engineered and factory-built as a compact, highly efficient unit. It's small enough to ride on a 3-ton truck and large enough to do a hard, money-making day's work.

With Oliver's advanced "Spot-Turn" clutch steering, it's tops in value. And you have a choice of proved gasoline or diesel engines, and "Travel-Reverser" or "Slo-Lo" transmissions.



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Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio

a complete line of industrial wheel and crawler tractors and matched allied equipment

For more facts, use Request Card at page 18 and circle No. 315

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Product Literature

pumps, and double-acting air engine pumps. Points out application advantages in bridge and building construction. Specifications included. Catalog A-5-58.

Write to the H. K. Porter Co., Inc., Forge and Fittings Division, W-S Fittings Works, Dept. C&E, P. O. Box 95, Roselle, N. J., or use the Request Card at page 18. Circle No. 66.

Earthmovers—a booklet from Caterpillar designed to aid in machinery selection for the sand and stone industries. Covers a wide variety of equipment and contains reports from actual operations explaining how Cat-made equipment effected savings in equipment working expenses. Size ratings for various haul units are listed. Form D850.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 51.

Crane carriers—specification sheets describing Maxi truck carrier models for cranes of from 35 to 45-ton capacity. Standard and optional components and equipment are listed. Detailed information on Maxibrake automatic safety device for use in the event of air-brake failure.

Write to The Maxi Corp., Dept. C&E, P. O. Box 3129, Terminal Annex, Los Angeles 54, Calif., or use the Request Card at page 18. Circle No. 108.

Versatile loader—a folder on the A500 Series Holmes-Owen loader for installation on dump trucks. Shows how, with this unit, one operator can load his truck, haul, dump, and also load other trucks. Three types described. Specifications.

Write to The Ernest Holmes Co., Dept. C&E, 2505 E. 43rd St., Chattanooga, Tenn., or use the Request Card at page 18. Circle No. 109.

Telescopic hoists—three catalog specification sheets on the new, complete line of Daybrook telescopic hoists for truck and trailer dump bodies. Specifications, applications, and hoist ratings.

Write to the Daybrook Hydraulic Division, Young Spring & Wire Corp., Dept. C&E, Bowling Green, Ohio, or use the Request Card at page 18. Circle No. 110.

Timber-concrete girder bridges—an illustrated brochure on Timber Structures' concrete spans supported by glulam timber girders. Stresses such benefits as long life with minimum maintenance; economy of material, labor, and equipment; flexibility in design and application; and no need for falsework or forming.

Write to Timber Structures, Inc., Dept. C&E, P. O. Box 3782, Portland 8, Ore., or use the Request Card at page 18. Circle No. 20.

Hoisting towers—an illustrated catalog describing the Bil-Jax line of material-hoisting towers. Light, medium, and heavy-duty models are pictured, and construction and operational features are discussed. Information on optional equipment such as hoppers, buckets, boom hoists, etc.

Write to Bil-Jax, Inc., Dept. C&E, P. O. Box 38, Archbold, Ohio, or use the Request Card at page 18. Circle No. 112.

Wheel tractors—a two-color folder explaining features of the Caterpillar DW21 and DW20 wheel tractors for use with scrapers, wagons, etc. Emphasis on such features as the Super Turbo engine and Torsionflex operator's seat. Performance graphs; cutaway drawings.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 113.

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CONTRACTORS TRUCK CRANE



one man operated — fully hydraulic

Here's a versatile, fully hydraulic, one-man operated truck crane that's an ideal contractors' utility tool. The HIAB 170 offers a range of lifting capacities from 6,000 lbs. on the shortened boom of 5' to 2500 lbs. on a full boom of 13'. The boom length is easily adjustable through hydraulic control. Ideal for general maintenance work, the HIAB 170 will lift up to 20' above ground level at a maximum speed of 20" per second. Control is from either side of the truck cab. Crane action is positive and accurate. 200° or 360° swing arc. When not in use, the HIAB 170 folds snugly behind the cab, taking only 15' of space. This leaves the entire truck bed open for load. Hydraulic outriggers to handle heavy loads are standard equipment.

WRITE FOR THE NAME OF YOUR NEAREST DEALER



1544 North St. Corona, California
Stamco, Inc.

For more facts, circle No. 317

To obtain the literature described on this page, write to the manufacturer or circle the designated number on the Request Card at page 18.

External vibrators—a folder on Vibro-Plus Topdog electric external vibrators. Emphasizes silent operation, power, and durable construction. Gives brief specifications for the four models offered. Illustrated with photographs and dimensional line drawings.

Write to Vibro-Plus Products, Inc., Dept. C&E, Stanhope, N. J., or use the Request Card at page 18. Circle No. 111.

Base-paver attachment—an illustrated bulletin on Blaw-Knox's mounting hitch for fastening its Model P-160 base-paver attachment to individual tractors. Features described include an oscillating screed; simple depth, width, and crown adjustments; and an easy-loading hopper that permits spreading over 400 tph of stone, slag, gravel, soil, or pug-mill-mix aggregates. Bulletin No. 2635.

Write to the Blaw-Knox Co., Dept. C&E, P. O. Box 1198, Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 94.

Tire valves, others—a catalog illustrating and describing the complete Dill line of tire valve products for off-the-road equipment. Covers such items as valves; valve insides, caps, spuds, and fittings; tire gages; couplings, hose assemblies; valve tools; tread gages; and vulcanizing equipment. Photographs; specifications; application information; mounting instructions.

Write to the Dill Mfg. Co., Dept. C&E, 700 E. 82nd St., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 69.

Plywood forms—a catalog on PlyGlaze overlaid plywood concrete form panels. Describes performance on jobs requiring smooth architectural concrete, and the cost-cutting potential in forms designed for 25 or more re-uses on one or more jobs. Application data included.

Write to the St. Paul & Tacoma Lumber Co., Dept. C&E, Tacoma, Wash., or use the Request Card that is bound in at page 18 of this issue. Circle No. 90.

Hardsurfacing fact file—an easy-to-use, 3 x 5-inch reference file for hardsurfacing information. Contains a master selector card that indicates the right Murex electrode or wire for a given application, as well as data cards giving many helpful facts for each electrode.

Write to the Metal & Thermit Corp., Dept. C&E, Rahway, N. J., or use the Request Card at page 18. Circle No. 6.

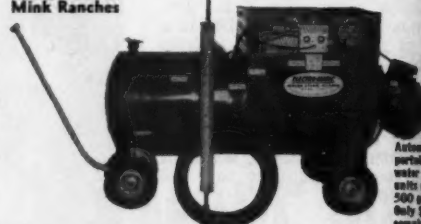
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CONTRACTORS AND SHOWN

Prestressing system—an informative booklet listing the benefits of the Prescon system of prestressing. Generously illustrated with photographs, charts, graphs, and drawings. Specifications included.

Write to The Prescon Corp., Dept. C&E, P. O. Box 4186, Corpus Christi, Texas, or use the Request Card at page 18. Circle No. 88.

Cold-mix bituminous—literature describing Gilsapave, a cold-mix bituminous concrete designed to be applied by conventional methods; said to be initially stable in cold and finally stable in hot weather.

Write to the George M. Jones Co., Dept. C&E, 1134 E. 4620 S., Salt Lake City, Utah, or use the Request Card at page 18. Circle No. 114.

Concrete, asphalt equipment—a catalog listing 21 different units of Watson-Cmetco concrete and asphalt-placement equipment. Illustrated with photographs and drawings. Catalog WCG-1P.

Write to Watson-Cmetco, Dept. C&E, 1316 67th St., Emeryville 8, Calif., or use the Request Card at page 18. Circle No. 83.

Tandem roller—complete specifications on the Buffalo-Springfield Model KT-7A 3 to 5-ton tandem roller. Photos show the quick, one-man attachment of the unit's optional towing wheels. Bulletin No. D75-858.

Write to the Buffalo-Springfield Roller Co., Dept. C&E, 1210 Kenton St., Springfield, Ohio, or use the Request Card at page 18. Circle No. 2.

Cabs for tractors—a fact sheet describing Industrial semi-enclosed cabs for Schramm Pneumattractors. Photographs show mounting details of both standard and heavy-duty models.

Write to the Industrial Cab Co., Dept. C&E, 36 Jefferson Ave., Salem, Mass., or use the Request Card at page 18. Circle No. 63.

Truck-mounted compressors—a new bulletin on Davey Auto-Air truck-mounted compressors. Includes photos, specifications, and installation drawings of the five models listed. Form E-273.

Write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 34.

For more facts, circle No. 321—

Self-priming pump—a specification sheet on Worthington's Blue Brute 30M engine-driven self-priming centrifugal pump (also available as a motor-driven unit). Contains complete dimensional and pump and engine data. Bulletin No. 6525-S7.

Write to the Worthington Corp., Dept. C&E, Worthington and Harrison Aves., Harrison, N. J., or use the Request Card at page 18. Circle No. 115.

Metal drainage structures—a bulletin on corrugated metal drainage structures. Contains data on products, sizes, gages, weights, and loadings, with useful tables and illustrations.

Bulletin CMS-10258.

Write to the Armco Drainage & Metal Products, Inc., Dept. C&E, 703 Curtis St., Middletown, Ohio, or use the Request Card at page 18. Circle No. 93.

Welding electrodes—a fact sheet on Lincoln Jetweld LH-90 and LH-110 high-tensile welding electrodes. Information on operating characteristics, physical properties, markings and current ranges, and operating procedure.

Write to The Lincoln Electric Co., Dept. C&E, 22801 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 64.

To obtain the literature described on this page, write to the manufacturer or circle the designated number on the Request Card at page 18.

Brushless ac generators—a booklet on the construction and performance characteristics of Kato brushless ac generators.

Write to the Kato Engineering Co., Dept. C&E, 1415 First Ave., Mankato, Minn., or use the Request Card at page 18. Circle No. 75.

Want lowest cost per ton?

buy Cedarapids

Stabilized Base Mixer Produces 700 TONS PER HOUR for Oklahoma Interstate Rt. 35

STABILIZING AGENT ATTACHMENTS MEET MIX SPECIFICATIONS



With this versatile unit, you can mix a controlled amount of water with the aggregate, or add calcium chloride, Portland Cement or emulsified asphalt, as specified. Cedarapids feeders provide precise metering of these materials into the mixer.

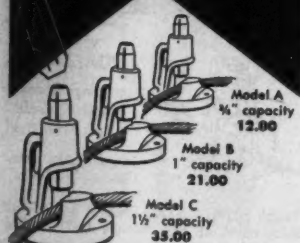
That's a production record for plant-mixed stabilization material in Oklahoma! Specifications called for a particularly high quality of mix, too. But Amis Construction Company's Cedarapids Twin-Shaft Stabilized Base Mixer blended three sizes of aggregate, mixed it thoroughly with a precisely controlled amount of water, and produced over 700 tons of stabilized aggregate base per hour! In other States, Cedarapids Stabilized Base Mixers are producing as high as 860 tph as a measured minimum!

Production like this is one of the many Cedarapids benefits that assure lowest cost per ton. In the Stabilized Base Mixer, and every plant or component in the complete Cedarapids Line, engineering emphasis is placed on high production, the ability to meet strict specifications, and low-cost operation. It adds up to more profit on each ton you produce!

Bulletin SBM-1 gives complete engineering details of the two sizes of Cedarapids Stabilized Base Mixers. Send for your copy today.

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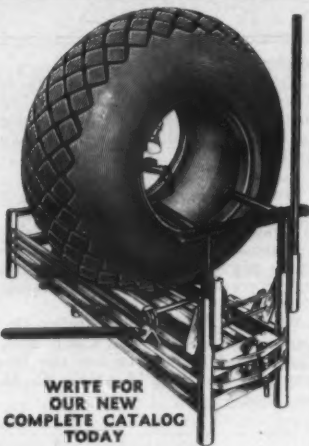
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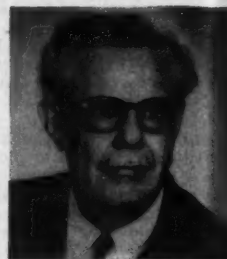
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For more facts, use Request Card at page 18 and circle No. 322



Clerical functions:

**Timekeeping
and payrolls**



by **GEORGE E. DEATHERAGE, P.E.**
construction consultant

Foremen's Daily Reports and Daily Visual Systems, which are records of the time each man works, are used by the payroll section of the clerical department for posting on the payroll record. The clerical department is interested only in the total straight and overtime hours worked, and in posting the total amount of the payroll to the specific Job Ledger account.

The job of posting the hours worked and calculating the amount due to the employee is complicated by deductions for Old Age Benefits, Unemployment Compensation, income tax (both federal and state), and, in some circumstances, deductions for union dues, welfare funds, and other fringe benefits. In order to comply with all federal and state regulations, employee records must be maintained in complete detail from the moment the man is hired.

No employee should be put to work without having filled out a record of application, Figure 1. The next step is to have a hiring slip filled out, stating the date of employment, the craft and rate. At the time of employment, and before the man has been put to



At left is the Barber-Greene Continuous Plant; at right is the BatchOmatic. Together these plants produced all asphalt tonnage on the test road. Both proved their ability to meet abnormally rigid specifications.

Barber-Greene meet tight AASHO test road specs

Two Barber-Greene Asphalt Plants, a continuous type and a BatchOmatic, produced every ton of asphalt mix on the AASHO test road near Ottawa, Ill. Every ton was laid with Barber-Greene Finishers.

Specifications on this important test road were more rigid than any normally encountered in highway work. Probably no asphalt mixing and paving equipment has ever before been called upon to meet such close tolerances.

Hundreds of combinations of asphalt mixes and base

and surface thicknesses were required. Each operation had to fall within the time limits specified by a rigid time schedule.

"We knew that Barber-Greene Asphalt Plants and Finishers had the ability to meet these rigid specifications," commented the asphalt contractor, Rock Road Construction Company of Chicago. With over 20 years' experience in the operation of Barber-Greene Asphalt Paving Equipment, the results again justify their confidence in Barber-Greene.



Paving steep super-elevations while staying within close specification tolerances was just one of the stringent requirements successfully met by Barber-Greene Finishers on the test road.



Paving on crawlers and traveling on rubber, the new Barber-Greene Model 873 Finisher paved all the test road's 6' asphalt shoulders in four days—at 64 different locations.

58-48-AL

Write for information on the world's most modern asphalt paving equipment.

Barber-Greene

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CONVEYORS...LOADERS...DITCHERS...ASPHALT PAVING EQUIPMENT

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PREWITT DIGGERS CUT JOB COSTS!

INDUSTRIAL

- Dig ANY Soil!
- Positive Feed!
- Economy Price!

Ideal for poles, posts, pier-holes.

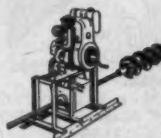
New INDUSTRIAL DIGGER cuts up to 6½ feet through clay, shale, gumbo, tree roots and frozen ground.



HORIZONTAL

- Straight Holes!
- Holds to Grade!
- Own Power Plant!

Designed for main, underground lines.



Tough HORIZONTAL DIGGER drills straight holes up to 48 feet through ANY soil. Skid-mounted, ready to go.

DEALERS INVITED

Write for FREE Literature

**J.R. PREWITT
AND SONS, INC.**
Manufacturers Since 1929

Phone 40
Dept. EC

For more facts, circle No. 324

CONTRACTORS AND ENGINEERS

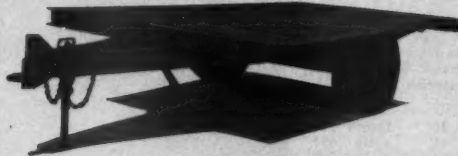
The Highway Trust Fund has a credit balance of more than \$663 million, despite expenditures that, in November, exceeded \$300 million. The credit balance consists of \$585,625,000 in Treasury certificates and \$77,420,002 in undisbursed funds.

This is the thirty-ninth of a series of articles on Construction Management by George E. Deatherage, P. E., consultant to National Schools of Construction Management and Heavy Equipment Operation, P. O. Box 527, Weiser, Idaho, and P. O. Box 1243, Charlotte, N. C. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by the National Schools. The manual is used in a training course for superintendents and project managers, and is directed primarily at those contractor employees at the foreman level or its equivalent, who need practical help in order to take complete charge of construction projects themselves.

10-TON TILT TRAILER by WISCONSIN

Professionally Engineered
ONE-MAN OPERATION

Model No. 1000 only
\$1210.00 FOB factory w/
tires and deck.



Ideal for HD-5, TD-9 or similar equipment. Also for pipe, forms, and material. One man "easy up-easy down" automatic hydraulic tilt deck only 33" high. No skids or blocks needed. Exclusive rear deck channel construction will not break away when loading. Extra strong frame throughout. Wire enclosed. Compare and you'll choose Wisconsin.

Other models, 3 to 16 ton available.

Write for catalog, prices and name of nearest distributor.

WISCONSIN TRAILER CO.

1949 N. 121st St.
Milwaukee 13, Wis.

For more facts, use Request Card at page 18 and circle No. 326

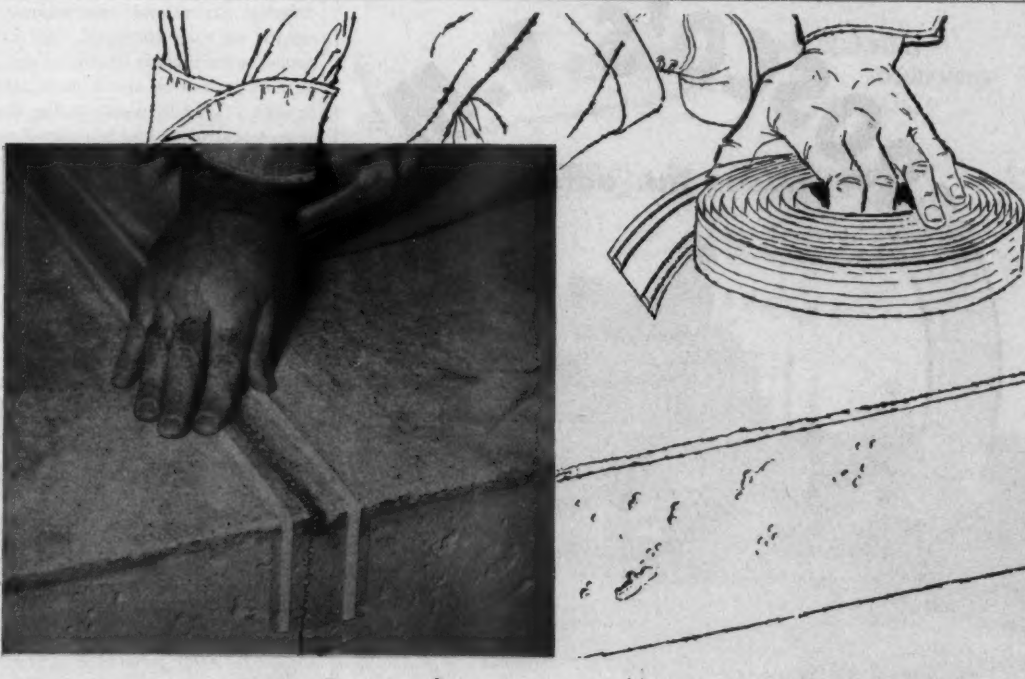
work, he must fill out and sign the U. S. Treasury Form W-4 as a basis for income-tax deductions.

Records of earnings

In "Practical Accounting and Cost Keeping for Contractors"—published by Frank R. Walker Co., 173 W. Madison St., Chicago 2, Ill.—is a Record of Employment and Earnings. This is an individual record for each employee, showing the total hours worked each day and each payroll period, rate of wages, and total earnings, together with deductions for Federal Old Age Benefit, Income Withholding Tax, Unemployment Compensation, and any other necessary deductions.

When a contractor operates locally or within the boundaries of one state, it may not be necessary to keep separate records of overtime. But when performing work for concerns conducting business in interstate commerce, it may be necessary to keep records of straight time and overtime separately to comply with the Wage and Hour Law.

This form provides a record for an
(Continued on next page)



New *ConSeal*® concrete joint curing tape (PRESSTITE KCD579.1) prevents moisture loss from joints... keeps joints clean until sealed

Here's a double-duty tape that obsoletes all previous methods of curing and keeping freshly sawed or formed joints in PCC absolutely clean of foreign matter prior to joint sealing. Here are some of the things new CONSEAL will do:

- Prevents loss of moisture so essential to the curing of sawed or formed joints in green concrete.
- Reduces spalling of joints to absolute minimum.
- Prevents infiltration of all foreign matter until joint has been sealed.
- Eliminates re-sawing, blowing of joint with compressed air, wire brushing, or "hooking out" of incompressible materials lodged in joints.

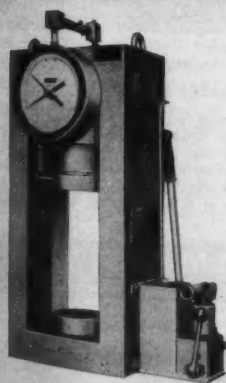
CONSEAL consists of two ribbons of special adhesive, applied to a polyethylene tape, equidistant from center, and protected by a glassine backing. During application this backing is snapped off and the tape pressure-applied so as to straddle the joint.

CONSEAL can be applied within 30 minutes after sawing and water-flushing the joint. The moisture which collects on the underside of the tape within 10 minutes or less is the original moisture in the concrete so essential to the proper curing of the joint, and will be retained by CONSEAL until the joint sealant has been applied.

*patent applied for

WRITE FOR FREE SAMPLE and
descriptive literature. Address Dept. C-5.

MODEL FT 20 JOBSITE CONCRETE TESTER



FOR: CYLINDERS, CORES,
BLOCKS, BEAMS, CUBES,
BRICK AND DRAIN TILE
FORNEY'S INC.
TESTER DIVISION
BOX 310, NEW CASTLE,
PA., U.S.A.

For more facts, circle No. 325



PRESSTITE-KEYSTONE
ENGINEERING PRODUCTS
COMPANY



A DIVISION OF AMERICAN-MARIETTA COMPANY • 3740 CHOUTEAU AVE. • ST. LOUIS 10, MO.
For more facts, use Request Card at page 18 and circle No. 327

For the first 11 months of 1958, tolls on the Kansas Turnpike were up 17.26 per cent as compared with the same period in 1957. Turnpike revenues from all sources were up 12.74 per cent for period of '58 over '57.

Campbell Cab for "Caterpillar" Tractor

D7-210 for D7 17A series tractor and D7-224 for D7 3T series tractor

WINDOWS—safety glass windows throughout. Sliding windshield glass.
CONSTRUCTION—all steel.
COLOR—painted yellow to match color of tractor.

DOORS—two heavy-duty sliding doors provide easy entrance and exit for the operator. Doors can be latched in an open or closed position.

MEASUREMENTS—
D7-210 length 56" width 65" height 58"
D7-224 length 54" width 65" height 58"

OPTIONAL EQUIPMENT—windshield wiper, sun visor, locking handles, heater-defroster unit.

CAMPBELL DETACHABLE CAB CO. • WAUCONDA, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 328



Applying bitumen through 2 feet of spraybar as shown may not appear unusual or different, but when the operator can use any length—from 1 to 24 feet—without changing the pressure and without any application adjustment whatever . . . then there's a difference. It's Rosco's Pressure Metering Method that makes that difference.

The P. M. method of applying bitumen is not metered by the bituminous pump, nor is the amount of discharge measured in relation to the pump revolutions. Normal wear of the pump and occasional, unavoidable nozzle clogging never affect the application rate. Here again, Pressure Metering makes the difference . . . the rate is automatically maintained by Rosco's P. M. system.

It is this Pressure Metering Master Valve, the "heart" of Rosco Distributors, that gives you this built-in control of pressure which is the only accurate method of obtaining precise bituminous application. This is the valve that also directs the flow of material for all of the Rosco Distributor functions.

Make the difference pay off. Let your Rosco dealer show you how. Write the factory for descriptive bulletins with specifications of Distributors with P. M.



3118 Snelling Avenue, Minneapolis 6, Minnesota

For more facts, use Request Card at page 18 and circle No. 329

(Continued from preceding page)

entire 12 months' employment. At the end of each quarter, these sheets are totaled and form the basis of government reports and payments.

Essentially, this is the same data shown on the payroll forms. However, if the individual Social Security record was not maintained, it would be necessary each quarter to go back to the payrolls and total the amount of payments and then enter them on a summarized record. Also, if the employee or the federal inspectors requested specific data on an individual, it would mean digging out all the payrolls for the information.

Social Security laws

The Social Security law stipulates that every employer must maintain complete payroll and other adequate records on each employee. The law applies to contractors employing eight or more persons on one or more days in each of any 20 weeks during the year. A contractor who has only three or four persons employed between jobs or in slack seasons should keep the proper records for these employees, for when he later increases his force and comes within the requirements of the law, these few employees

must be included in the total for the year.

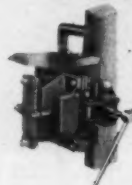
Under the law, the contractor is required to keep permanent records to establish the total amount paid to his employees; the amount of contributions paid by him through any state employment fund; and deductions from employees' pay for Unemployment Compensation or Old Age Funds.

Each time an employee is paid, the employer must furnish him with a written statement showing the amount of taxes deducted from his wages. At the end of the year or at the termination of employment, prior to the end of the year, the employer must give each employee a statement showing the total wages earned during that year, together with the amount withheld for Federal Old Age Benefit taxes.

All records required by the Social Security law should be kept in a safe location accessible to internal-revenue officers. The records must be maintained for at least four years after the date the tax is due, or the date the tax is paid, whichever is later.

Complete data on all Social Security laws and regulations is con-

SYNTRON CONCRETE VIBRATORS



Electromagnetic Concrete Form Vibrators



V-55 Vibrator used to make a Vibrating screed



Electric or Gasoline Mass Concrete Vibrators



Gasoline Flexible Shaft Concrete Vibrator used in large footer form

for faster placing and better concrete

SYNTRON Electromagnetic Concrete Vibrators provide a positive vibrating action that insures uniform compacting and settling of concrete. Easily attached to concrete pipe forms, block making machines, screeds, wall forms, etc.

SYNTRON Mass Concrete Vibrators are ideal for settling concrete in narrow forms, footers, columns, foundations, etc. Flexible shaft with vibrating head is easily placed into forms. Available with 1½ or 2 hp. Electric Motor or 5 hp. Gasoline Motor. Flexible shafts available in lengths from 12 to 42 ft.

SYNTRON COMPANY

227 Lexington Ave.

Homer City, Pa.

Write for catalog data—FREE

Other SYNTRON Equipment of proven dependable Quality



ELECTRIC HAMMERS AND HAMMER DRILLS



ELECTRIC SAWS



VIBRATORY FEEDERS

For more facts, use Request Card at page 18 and circle No. 330

CONTRACTORS AND ENGINEERS

APPLICATION FOR EMPLOYMENT

NAME: **Samuel Dunbar** DATE OF BIRTH: **September 19, 1911**

ADDRESS: **1688 Glenwood Drive, Arlington, Illinois**

EDUCATION: **High School Graduate**

EXPERIENCE: **Has experience in concrete formwork. Has reputation for being sober and reliable.**

REFERENCE: **Charles Tracy, Supt.**

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Figure 1.

tailed in "Circular E—Employers Tax Guide," which may be obtained from the local offices of the Bureau of Internal Revenue.

Unemployment Compensation

The Unemployment Compensation Act applies to every firm employing

eight or more persons on one or more days in each of any 20 weeks during the year, whether or not the states where employees are located have Unemployment Insurance. The requirements for the number of employees varies in states.

(Continued on next page)

During the 1956-1958 biennium, the Pennsylvania Department of Highways received bids on 450 construction projects, of which 26 were financed by the State Highway and Bridge Authority. Total cost was \$306,656,614.

No Matter What SIZE... No Matter What SHAPE...

QUINN CONCRETE PIPE FORMS

Set The STANDARD For Producing Quality Pipe!

Over 50 years of experience go into the production of every Quinn Concrete Pipe Form. That's why the Quinn Heavy Duty form is recognized as the STANDARD the world over for producing quality concrete pipe at the lowest cost. Used in making pipe by vibration, spading, or tamping. Sizes for pipe 10" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired. No matter what size, shape, or length pipe you need, there's a Quinn pipe form made to fit your requirements. Write today for our FREE catalog and estimates.

Also Manufacturers of QUINN CONCRETE PIPE MACHINES

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FLECO.

LAND CLEARING
EQUIPMENT
SPECIALISTS

SORTING RIPRAP, GRUBBING or STACKING

A Fleco Rock Rake, on a Cat D8 Tractor, sorts fill material on the Bear Creek Dam Project. Oversize rock and boulders are combed out, while soil and acceptable rock sifts through.



Fleco Rakes cut handling costs!

● When there's tough material to handle, there's a Fleco Rake to do the job. Cast manganese-steel teeth on box beam frames comb out rock, brush, and roots—with a minimum of soil displacement. Teeth can be removed for spacing that matches your work requirements.

Tough Fleco Rakes, available for all models of Caterpillar track-type Tractors, can put high production in tough material handling chores. Ask your Caterpillar-Fleco Dealer for details or write direct.



A Fleco Multi-Application Rake, on a Cat D9 Tractor, clears right-of-way in Georgia. MA Rakes are available for both straight or angling dozer frames, have teeth that can be variably-spaced for varying applications. MA Rakes are designed for stump and tree removal, riprap spreading, piling and other heavy duty jobs.



The Fleco Traxcavator Rake, for all Cat Traxcavators, replaces the standard bucket for grubbing out boulders, trees and stumps. There's leverage for prying and tree-pushing, high lift for loading or piling—designed for profitable versatility!

FLECO CORPORATION

P. O. Box 2370, Jacksonville, Florida, U.S.A.
FLECO INTERNATIONAL, INC.
FLECO OVERSEAS LIMITED
P. O. Box 820, Nassau, N.P. Bahamas

ROCK, ROOT & BRUSH RAKES
TREE CUTTERS • UNDERCUTTERS
CAS GUARDS • ROOT CUTTERS
ROOT FLOWS • STUMPERS
TREEDOZERS • ROLLING CHOPPERS
HEAVY-DUTY TOOL BARS

For more facts, use Request Card at page 18 and circle No. 333

4 in 1

3 in 1

2 in 1

GASOLINE ENGINE DRIVEN
WELDER/POWER PLANTS



FIREBALL AMPERAGE RANGES	
METALLIC	INERT GAS
35-100 AC	35-75 AC
65-160 AC	65-160 AC
110-400 AC	150-375 AC
35-80 DC	35-100 DC
75-175 DC	85-225 DC
125-350 DC	170-375 DC

DAH-350 FIREBALL four-in-one model is the only complete unit made to incorporate an ac-dc welder for (1) metallic arc, or (2) tungsten inert gas welding, plus (3) ac power plant, and (4) 1 KW dc power while welding. Twelve separate ampere ranges as shown above. Additional standard equipment features include a polarity switch, either continuous or "start only" high frequency and an automatic inert gas control panel with solenoid valve and postflow timer. Rated output at 100% duty cycle: 250 amps dc tungsten arc; 300 amps ac tungsten arc. Generator: 10 KW of 115/230v, single phase, 60 cycle ac.

DA-300 BIG RIG. Combination ac-dc welder, plus an ac power plant, plus 1 KW of dc power while welding, give this model three-in-one versatility. Generator rated at 10 KW of 115/230v, single phase, 60 cycle ac. Welding ranges in amperes are: (dc) 75-175 or 125-350; (ac) 65-160 or 110-400. Rated output at 100% duty cycle: 250 amps dc at 40 volts and 300 amps ac at 40 volts.

D-250 ROUSTABOUT provides a two-in-one arrangement whereby either of two dc welding current ranges — 75-175 amps or 125-350 amps — and 1 KW of 115v dc auxiliary power are available simultaneously. Rated output is 250 amps at 40 volts, 100% duty cycle. Generator produces 10 KW of 115/230v, single phase, 60 cycle ac.

All models offered with skids or trailers. Complete specifications and prices sent promptly.

Miller

ELECTRIC MANUFACTURING COMPANY, INC.



Manufactured in Canada by Canadian Electric Ltd., Montreal • APPLETON, WISCONSIN

For more facts, use Request Card at page 18 and circle No. 331

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amount paid to each employee for that year, together with the amount withheld for income tax. A copy of this statement must also be furnished to each employee as a guide to prepare his federal income tax return for that year.

The quarterly reports do not itemize the amount deducted from each employee; only the total amount of the deductions is given. The total of the individual annual statements must agree with the total of the four quarterly reports.

Payroll

To comply with the requirements of the Social Security Act, every employer has to keep a weekly, semi-monthly, or monthly payroll showing the number of hours employees worked each day, total hours worked each payroll period, and rate of pay, together with total earnings for the period.

The entries are made from time books, foremen's reports, daily labor distribution sheets, or other records, depending on the system used. At the end of the payroll period, the daily hours are added up and multiplied by the rate of pay to give the gross pay. To comply with the Wage and Hour Law, pay for the regular and overtime hours should be calculated separately.

Once the gross earnings are determined, the deductions are made and posted in accordance with Form W-4 for the income tax, and at the proper rate for Social Security. These totals are subtracted from the gross pay to arrive at the net amount paid the employee. If there are other deductions—union dues, bond payments, etc.—these also must be deducted before arriving at the net total.

When the payroll is complete for the payroll period, it must be balanced in two ways to prove it and to

(Continued on next page)

WEEKLY PAY-ROLL														
NAME OF WORK <i>Central Hospital</i>					LOCATION <i>Indianapolis, Indiana</i>					CONTRACT NO. <i>117</i>				
PAY-ROLL SHEET NO. <i>1</i>					WEEK <i>August 6, 19--</i> TO <i>August 12, 19--</i>									
EMPLOYEE NO.	EMPLOYEE NAME	EMPLOYEE ADDRESS	REGULAR TIME WORKED	OVERTIME	TOTAL TIME	REGULAR RATE	OVERTIME RATE	TOTAL EARNINGS	DEDUCTIONS	NET PAID				
			M	T	W	T	F	S						
151-41-247	Laborer James McLean		12	1	1	1	1	1	3	2.10	6.30	10.00	4	8.90
152-41-2312	Robert Gordon		12	1	1	1	1	1	3	2.10	6.30	10.00	4	8.90
153-41-2184	Samuel Olson		12	1	1	1	1	1	3	2.10	6.30	10.00	4	8.90

WEEKLY PAY-ROLL														
JOB NO. <i>112</i>					LOCATION <i>Arlington, Illinois</i>					WEEK <i>October 19, 19--</i> TO <i>October 25, 19--</i>				
NAME OF WORK <i>Municipal Water Treatment Plant</i>					PAY-ROLL SHEET NO. <i>1</i>									
EMPLOYEE NO.	EMPLOYEE NAME	EMPLOYEE ADDRESS	REGULAR TIME WORKED	OVERTIME	TOTAL TIME	REGULAR RATE	OVERTIME RATE	TOTAL EARNINGS	DEDUCTIONS	NET PAID				
			M	T	W	T	F	S						
1	Laborer John S. Williams		12	1	1	1	1	1	3	2.00	10.00	4.00	11.00	15.00
2	" Fred Anderson		12	1	1	1	1	1	3	2.00	10.00	4.00	11.00	11.00
3	Joseph Smith		12	1	1	1	1	1	3	2.00	10.00	4.00	11.00	11.00

Figure 3.

McKissick Builds a Better Hook and Block

McKISSICK

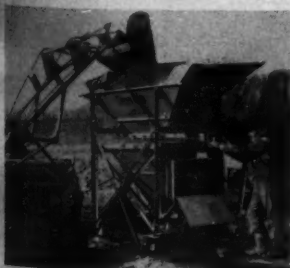
McKISSICK PRODUCTS CORPORATION

Box 2496 Tulsa, Oklahoma

FROM FLORIDA
TO BAFFINLAND



CIMCO TWIN BIN and BUCKET team cut concrete costs \$9.75 per cubic yard.



CIMCO

LOW-PRICED
BATCHEX-BUCKETS

For complete information, specifications
and prices on all CIMCO products, write:
CIMCO, Box 422, Marshalltown, Iowa

For more facts, circle No. 336

For more facts, use Request Card on page 18 and circle No. 337

STERLING EARTH BORING MACHINES

**2 IN 1
DIGGER
DRIVER**

**WYOMING
VALLEY
EQUIPMENT
DIVISION**

KINGSTON, PENNSYLVANIA
Telephone BUiler 7-3158

GUARD RAIL CONTRACTORS & HIGHWAY DEPARTMENTS!

Steel Post Driver For Any Model Sterling Digger. YOU can Dig the Hole, Set the Post or Drive the Steel Post with one unit at one cost and one maintenance Dig or Drive from either side within 180° radius.

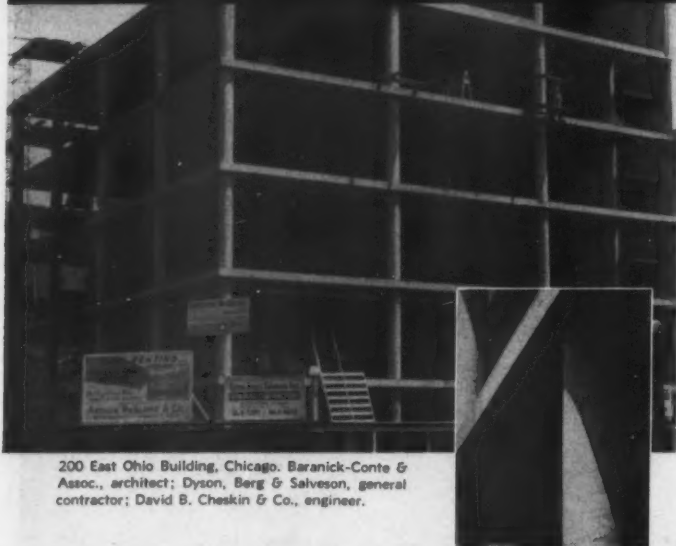
Driving Plate can be removed and auger installed on Digging Bar in five to ten minutes.



A Proven Machine
At Less Than Half
The Cost of Similar Equipment.

For more facts, use Request Card at page 18 and circle No. 338

Faster Forming of round concrete columns



200 East Ohio Building, Chicago. Baranick-Conte & Assoc., architect; Dyson, Berg & Salverson, general contractor; David B. Cheskin & Co., engineer.

Use low-cost, easy-to-handle

SONOCO

Sonotube. FIBRE FORMS
to speed construction, reduce cost

Ninety-five round columns of concrete provide vertical support for this downtown Chicago office building. To save time, labor, and money, the columns were formed with low-cost, patented "A" coated Sonoco SONOTUBE Fibre Forms.

Flexible in use, Sonoco Fibre Forms can be sawed to fit specific job requirements. Integrate with slab forms, punch for conduits or bolt anchors, or use to form obround or half round columns.

Lightweight and easy to handle, Sonoco SONOTUBE Fibre Forms require only minimum bracing and strip quicker, finish easier . . . provide the fastest, most economical way to form round columns of concrete.

Choose from 3 types: Seamless (premium form for finished columns), "A" coated (standard form for exposed columns), and wax coated. Sizes from 2" to 48" I.D. Order in required lengths or standard lengths of 18'.

Booth No. 30
A.C.I. Convention
Feb. 23-27, 1959
Los Angeles, Calif.

SONOCO
Construction Products

3480

SONOCO PRODUCTS COMPANY

For more facts, use Request Card at page 18 and circle No. 339

(Continued from preceding page)

Figure 4.

discover any error. The first step is to compare the total hours worked by all employees, as reported to the payroll clerk. If the regular and overtime hours agree, the payroll is in hourly balance.

The second step is to add all the money posted under regular hours and overtime. This is done by totaling the vertical columns, and subtracting the total deductions to see if this amount of the payroll agrees with the total net amount to be paid. If it agrees, the payroll balances.

The gross amount of the payroll should equal the totals in the Cost Department and, on cost-plus contracts, be approved by the owner's representative.

Weekly payroll

A Weekly Payroll and Labor Distribution Sheet, Figure 2, is for use

by contractors who desire a daily and weekly distribution of each workman's time. The sheet is particularly good for men working on a number of different jobs during the week; or where they are working on one job and it is desirable to make a distribution of time to the various classes of work, such as setting concrete forms or reinforcing steel, mixing and placing concrete, etc.

The sheet is a double-page form printed on two sides. It provides space for recording the daily and weekly time on six different jobs or six different classes of work during any one week, giving the total number of hours and the cost of each job or labor classification.

When men work on more than six different jobs or labor classification, one of the regular sheets may be cut off to form a short sheet. This pro-

WARN HUBS
on your 4-wheel drive
stop front end drag
in 2-wheel drive!

Models for
all makes
of 4 w. ds.
to 1½ tons
at dealers.
Write for
literature.

**NEW ECONOMY!
NEW CONVENIENCE!**

Save on repairs, tires, gas... get new pep, handling ease... with Warn Hubs, the original "selective drive." You'll be way ahead with either automatic LOCK-O-MATICS, or fingertip control Warn Locking Hubs. Unconditionally guaranteed.

WARN MANUFACTURING CO., Inc.

Riverton Box 6064-CM2, Seattle 36, Wash.

For more facts, use Request Card at page 18 and circle No. 340

PROVEN IN OVER A
BILLION MILES
OF USE UNDER
ALL CONDITIONS!

CONTRACTORS AND ENGINEERS

vides columns for six additional job costs or labor classifications. Any number of short sheets may be inserted to provide records of job costs or labor distributions.

The form also provides space for the employee's occupation and name; income withholding-tax classification, number, total hours, hourly rate, and total earnings; together with deductions and net amount paid.

A Wage and Hour Weekly Payroll sheet, Figure 3, provides space for both straight and regular time, also for excess or overtime earnings. This form also contains space for the same items as the Weekly Payroll and Labor Distribution.

Paying employees

Workmen are paid either by check

or cash. It is preferable to pay by check, since this requires much less labor, there is no chance for payroll robbery, and the check serves as a receipt.

If pay is made by check, the gross amount, deductions, and net amount can be copied from the payroll, or time can be saved by using one of the "one-writing" systems wherein the check and the Social Security record are written simultaneously, Figure 4.

The payroll check has a carbon line on the back of the portion showing earnings and deductions, so that when the entry is made on the check stub, an exact copy is also made on the earnings record. This insures accuracy, saves considerable time, and eliminates the need for copying these amounts.

If payments are to be made in cash on the job, a check will have to be written to the bank for the total amount of the payroll, a "change slip" made out, and the money placed in individual envelopes. A change slip is a list of the number of bills and coins of varying denominations that will be required to fill payroll requirements. If this data is supplied to the bank in advance, it will make up the payroll. When the pay is made in cash, it is necessary for the employee to sign the envelope, since without this there is no receipt.

(Next month's article will deal with "Clerical functions: Bookkeeping on large jobs.")

Seaway Authority names

R. J. Burnside has been appointed director of operation and maintenance by The St. Lawrence Seaway Authority, Ottawa, Ont., Canada. He has been a director of the Authority's canal services for the Department of Transport since 1955.

Teer elected ARBA head

Nello L. Teer, Jr., president of the Nello L. Teer Co., Durham, N. C., has been elected president for a one-year term of the American Road Builders' Association. A past president of the ARBA Contractors' Division, Teer was recently vice president for the Southern District. John P. Moss of the Moss-Thornton Construction Co., Leeds, Ala., has been elected to take over Teer's last post.

Yale & Towne elects

Elmer F. Twyman, a vice president of the Yale & Towne Mfg. Co., New York, N. Y., since 1950, has been elected senior vice president of the firm. Twyman directs the material-handling operations of the company.

Chrysler engine division makes four appointments

Chrysler Corp., Marine and Industrial Engine Division, Detroit, Mich., has made four new appointments. Bruce B. Spratling is product sales manager; M. J. Yost, manager of field operations; William M. Volendorf, advertising and sales promotion manager; and Robert C. Loman, manager of parts and service.

Sika executive retires

Emil Spinden has retired as vice president and chief engineer of Sika Chemical Corp., Passaic, N. J. A member of the firm since 1932, Spinden will continue to serve as a vice president and consultant.



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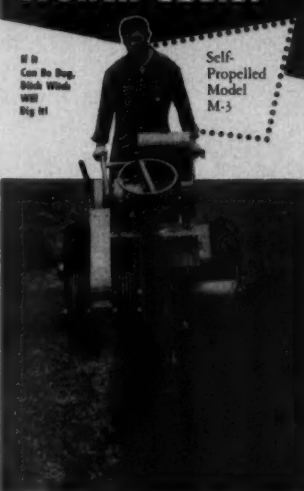
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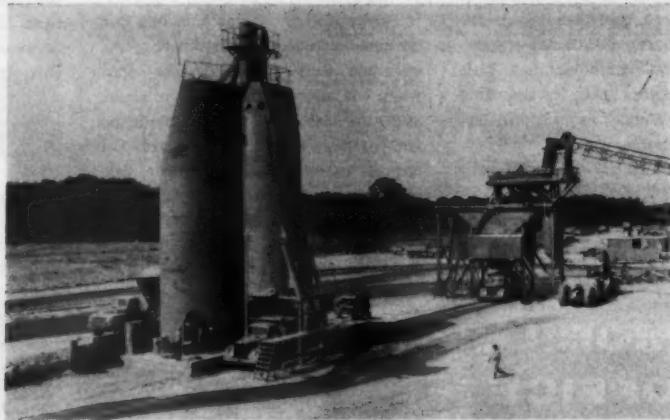
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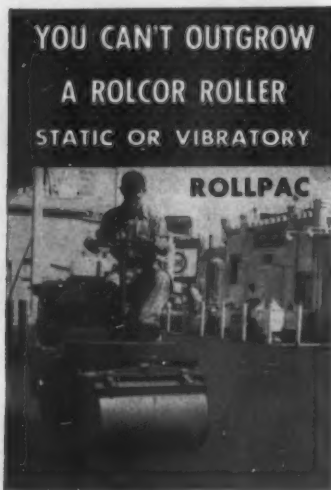
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Master paving plan keeps three paving trains moving on tri-level interchange



Concrete was supplied to the three paving trains on the tri-level interchange job on the Northern Illinois Toll Highway by a Johnson automatic batch plant. The trucks—International 190's with Daybrook 4-compartment bodies—are first loaded with two sizes of limestone aggregate by the double batcher, which is fed by a conveyor. The 400-barrel silo delivers two batches of cement simultaneously.



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The paving of a tri-level interchange
area on the Northern Illinois Toll
Highway required careful planning,
specialized equipment, and plenty of
hard work.

As paving jobs go, it was a tough
one. Some nine structures, numerous
connecting ramps, and a toll-plaza
area chopped the paving sections into
short strips. On the ramps and the
toll plaza, variable-width pavements
further complicated the job.

To make matters worse, detours of
heavily traveled highways sliced

through the project. Although the
contract was only 2.7 miles long, it
contained the equivalent of 9 miles of
4-lane divided highway.

To bring order to this confusion, the
contractor prepared, in advance of
actual paving, a master paving plan.
The moves of the paving equipment
had to be thought out as carefully as
the moves in a chess game.

For the complicated paving job,
three paving trains were necessary.
One special train was kept busy pay-
ing the variable-width sections and

transitions. The main paving train
built 25 feet of the 37-foot-wide pav-
ement, while a "narrow-gage" train
tackled the additional 12 feet in the
3-lane roadway.

Providing stakes for the paving as
well as the grading of the tri-level in-
terchange was a continual challenge
to the field engineers. As many as four
survey parties, furnished by the con-
tractor, were required to keep up with
the construction.

To help engineers as well as other
field personnel to visualize the com-

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CONTRACTORS AND ENGINEERS



A Bucyrus-Erie 54-B crane with Blaw-Knox 3 1/2-yard rehandling bucket takes a bite of the large-size aggregate to deliver it to the recovery tunnel leading to the screens above the batcher.



The Koehring 34-E paver in the main paving train dumps concrete over wire-mesh reinforcing to build the top 4 inches of the 10-inch pavement. A B-K spreader follows. This train built a 25-foot width of the 37-foot-wide pavement.



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pleted product, the contractor built a scale model of the interchange and the connecting ramps. Also helpful in the early stages of the construction was another visual aid: a plan of the interchange inked on an aerial photograph.

\$24 million contract

The construction of the interchange was included in a \$24 million contract for the grading, paving, and structures of two adjoining sections on the Tri-State Route of the Illinois Toll

Highway. The big contract was awarded to a joint venture comprised of Western Contracting Corp., Sioux City, Iowa; Healy Bros. & Co., McCook, Ill.; Ryan Construction Co., Inc., Evansville, Ind.; and M. J. Boyle & Co., Chicago. Western handled the grading and paving of the section that included the tri-level interchange.

Located near Elmhurst, Ill., the interchange will carry the Tri-State Route over the East-West Tollway. At

(Continued on next page)



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The special paving train handling the variable-width and transition sections, such as this one which stems off from the main traffic lane, was also led by a Koehring 34-E. The spreader is a modified Heltzel variable-width screed. As the roadway narrows, hydraulic pistons pull wheels together.



With paving done in short, isolated stretches, paving trains had to be moved as often as four times a day. Particularly valuable in this operation was an American 599 40-ton motor crane, which here lifts the modified Heltzel variable-width screed to the bed of a waiting trailer.

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(Continued from preceding page)

this point, the Congress Street Expressway, leading out of Chicago, joins the East-West Tollway.

\$441 million tollway system

Although \$24 million is a sizable contract, it is only a penny in the pot compared to the \$441 million price tag on the entire tollway system. The 187-mile system consists of three major routes: the 83-mile Tri-State Route, which loops around Chicago and heads north to the Wisconsin border; the 76-mile Northwest Tollway, which stems off to the northwest, connecting the cities of Elgin, Rockford, and Beloit; and the 28-mile East-West Tollway, linking the system to Aurora, Ill. Cook County is currently building its expressway system to tie in with the tollways.

Perhaps one of the most involved paving jobs along the entire route was the contract for the 3-level interchange near Elmhurst. The longest uninterrupted stretch in the 287,000-square-yard contract was only about a mile in length. Because the pours

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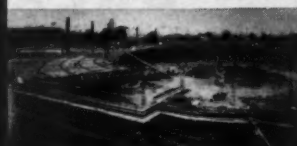
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This Clary power screed handles the finishing operation in the special train. Two rear rollers push the rig forward and smooth the concrete. Most of the finishing and floating is done by the eccentric motion of the front roller, which rotates at high speeds. Since the screed is not on wheels, it works well on variable-width pavements such as this.

were so chopped up, it wasn't unusual for one of the paving trains to move as often as four times a day.

Special train for variable widths

For the numerous variable-width sections, Western put to work a special paving train. It was headed by a Heltzel variable-width screed, modified to do the work of a spreader. The front blade of the screed was extended downward to cut the concrete off 4 inches below the top of the forms. As a standard part of the equipment, hydraulic pistons pulled the wheelbase together as the forms converged.

After the wire mesh was placed on the 6-inch lift, a Heltzel variable-width finishing machine both spread and partially finished the top 4 inches of concrete. One Koehring 34-E dual-drum paver placed the concrete for both lifts.

A Clary power screed followed behind the variable-width finishing machine. The forward motion of the screed was imparted by two long rollers that rested on the forms. An ec-

(Continued on next page)

The construction program of the Michigan State Highway Department reached an all-time high in 1958: an estimated \$190 million in work was placed under contract as compared to \$164 million in 1957. About 150 miles of dual highways and 500 miles of other types of roads were opened in 1958.

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FEBRUARY, 1959

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Another B-E 54-B swings material to the Johnson sand batcher. The plant, with automatic controls, delivers two batches of sand simultaneously.

(Continued from preceding page)

centric roller, rotating at high speeds, provided a floating and finishing action. Because the rollers were able to overlap the forms, the machine was particularly useful for variable-width pavements.

After some hand-finish work, men dragged burlap over the fresh concrete and then sprayed it with a curing compound.

Every day is moving day

Sometimes, before the hand finishers went to work on one section, the first spreader was already being hauled away to another section. A 40-ton American 599 motor crane was used to move equipment of the special paving train, as well as that of the other two trains. On the longer moves, the equipment was loaded on a low-bed and hauled to the next section.

Batch plant

The Johnson automatic batch plant, set up on the job, had no trouble gearing its production to the two paving trains normally in operation. In passing through the plant, the 4-compartment trucks made three stops under the double batchers.

Above the aggregate batcher was a double-deck vibrating screen for rescreening the limestone aggregate. The vibrating screen eliminated the fines and passed the plus 1-inch material to one compartment and the minus 1-inch material into the other compartment. The weigh buckets proportioned the two sizes of rock and dumped two batches simultaneously into the waiting truck.

Batch trucks

Purchased new for this job, the International 190 tandem-axle trucks kept batches moving to the paver with a minimum of downtime. The hydraulically controlled gates of the Daybrook 4-compartment body permitted the driver to release the batches from the cab. Gates, with the exception of the tail gate, were controlled from the cab. Another feature of the body made it convenient for switching from batch to a straight dump truck: it is possible for the three gates, along with the cement cans, to be lifted out of the body as a unit.

Personnel

For Western Contracting Corp., Malcolm Schaller is project manager and H. K. Herland is project engineer. Frank J. Venezia is the resident engineer for the section engineer on the work described.

E. Lionel Pavlo, consulting engineering firm of New York City, is responsible for the design of the adjoining sections. The consultant for the over-all design of the tollway system is Joseph K. Knoerle & Associates, Chicago.

THE END

A national leader in superhighway safety since its 1954-55 opening, the New Jersey Garden State Parkway had its lowest fatality rate in 1958, despite a 47-million-mile increase in total travel.



H. K. Herland, project engineer for Western, studies a model of the 3-level interchange job, which the contractor built as an aid for engineering and field personnel.

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CONTRACTORS AND ENGINEERS



Dealer contest pays off: Guy Berger, left, vice president of the Newington branch of H. O. Penn Machinery Co., Inc., New York City, gives a \$1,000 prize check to Dominic Gencarelli, of Gencarelli, Inc., Westbury, N. Y., for completing "I preferred to buy a used machine because..." in 25 words or less. Looking on is Philip Geidel, who made the winning sale. The contest was open to those who purchased machines in November and December, and it resulted in the largest volume of equipment ever sold by H. O. Penn in those months.

Sherman grants license to use patented bucket

Sherman Products, Inc., Royal Oak, Mich., has granted a license to Massey-Ferguson, Inc., Detroit, to use the Sherman patented hydraulic-actuated bucket. Similar rights have been granted to the Bucyrus-Erie Co., South Milwaukee, Wis.; The Hyster Co., Portland, Ore.; Joost Mfg. Co., Berkeley, Calif.; and Wain-Roy Corp., Hubbardston, Mass.

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Bruning branch relocates

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by E. E. HALMOS

Money for Highway Trust Fund to pose problem for Congress

Congress is going to have to decide—and fast—what to do about the Highway Trust Fund, which under present conditions will be running out of money by fiscal year 1961.

Congress created the problem for itself last summer. In a rush of anti-recession measures, it okayed spending an added \$1.2 billion for highways during fiscal '59 and '60, suspending the pay-as-you-go provisions of the original law for this purpose. But the

lawgivers made no provision for repaying the trust fund for the extra money spent or authorized.

As matters now stand, the Treasury Department estimates receipts of the fund at something over \$2.3 billion each for fiscal years 1960 and 1961. But authorizations by the states for each of those years is roughly \$3.4 billion. Shortage: \$2.2 billion.

There are several choices open: Congress can continue to suspend pay-as-you-go provisions, thus permitting a deficit type of spending on

the roads; bring the provision back, thus in effect holding back the program until revenues catch up; borrow from the general fund; or raise the taxes that now support the fund.

The prospect of raising taxes has already brought forth complaints from many user groups. The best bet seems to be further suspension of pay-as-you-go, as the easiest political out, even though Democrat Harry Byrd and President Eisenhower are likely to be put into an unusual team to oppose such a move.

Many Congressional bills to affect construction men

Of the thousands of bills that will go into Congressional hoppers in the next few months, some key ones will concern construction men, directly or indirectly. For a list of things to watch, note these:

- A proposal to unify all government agencies that have to do with transportation—road, rail, air, sea—in a new agency either under the Commerce Department or completely independent. The Bureau of Public Roads would be one of the affected agencies.

- A federal-city study of "mutual" problems. This is important, since it envisions bypassing the long-standing federal-state intercourse and contemplates going directly to the major cities to discuss problems of water pollution, housing, slum clearance and highway construction.

- A bill to permit TVA to finance its own expansion—mostly steam-plant construction.

- Sizeable increases in appropriations for public power development.

All of these new proposals should be considered in the light of the President's avowed intention of fighting a "spending" Congress and holding down federal spending to balance the budget.

Over-all construction to rise in coming year

At least two of the new forecasts of construction activity for 1959 are in basic agreement as to total and percentage of rise.

The joint Department of Commerce-Labor forecast calls for a \$52.1 billion year, compared with \$48.8 billion for 1958. Three-fifths of this gain is expected to come in public work, which should rise to \$17.1 billion from \$15 billion in 1958. Private construction will go to \$35.2 billion—compared to last year's \$33.8 billion—with residential work accounting for most of the increase. Highway work will hit about \$5.6 billion.

The Associated General Contractors agrees closely. The organization looks for a \$52 billion year for new construction; a 16 per cent rise in public works, with emphasis on highways. AGC added that the industry will do another \$20 billion in maintenance and repair work.

HEW officials to spend money; jobs will be scarce, though

Don't look for more jobs from the Department of Health, Education and Welfare, in spite of what press statements of HEW officials sound like.

Speaking with apparent administration approval, HEW officials said they will spend "more money than ever before" in fiscal 1960. But most of this will go for educational and research programs, though some will also be allocated to such items as new hospital and laboratory construction.

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For more facts, use Request Card at page 18 and circle No. 360

How 2 cu. yd. Trojan handles all loading operations for Midland, Texas Plant.



Replacing another tractor shovel, this Trojan 154 gives a production boost to the ready-mix plant of West Texas Concrete Products, Inc. The precision control, fast travel speed and high capacity allow it to keep the batcher loaded and still handle truck loading, stockpile maintenance and other chores around the plant.



Trojan 154 digs in, moves material and charges batcher on a fast, continuous cycle.



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For more facts, use Request Card at page 18 and circle No. 361



TROJAN 154 BETTERS RATED CAPACITY—PROVES “INDISPENSABLE” IN READY-MIX PLANT OPERATION

High capacity and precision control were the features that sold West Texas Concrete Products, Inc. on the Trojan 154. They needed a fast operating machine with the ability to dump exact amounts of material into the batcher. This was no problem for the Trojan 154. . . . But they required a machine with a 2½ cu. yd. capacity. A trial of the 2 cu. yd. model 154 proved that the Trojan could better its rated capacity by ½ yd. load after load, day after day, and still maintain work cycles fast enough to allow it to handle other jobs around the plant area. “The Trojan 154 is a fast loading, fast travelling machine,” says Mr. John Marlow, Plant Superintendent of the Midland, Texas Plant. “Its part in boosting the speed of our operation has meant considerable savings for us.”

A loading operation for the Trojan tractor shovel involves carrying 6,000 lbs. of rock, 8,000 lbs. of regular sand and one load of fine sand—dumping the correct amounts into the batcher and returning the surplus to the stockpile. The batcher, in turn, dumps the mixture into the ready-mix truck. The fast loading cycles of the Trojan 154 help to complete this entire operation in six minutes.

Note steep slope, right rear, near Academy buildings. Well-balanced Michigan Scrapers did grading there as well as on more level ground.



Extra capacity pays off on scattered landscaping at Air Force Academy

MICHIGAN SCRAPERS UP OUTPUT 20%

How would you handle a contract where your work was scattered over 17,800 acres? Where you had to move 5,000 yards here, 25,000 there, 10,000 there? Where you had to work across paved highways, at high altitudes, often on steep slopes?

These were the problems faced by C. S. Jones, Palmer Lake, Colorado, on his contract to landscape and do erosion control work throughout the huge, new Air Force Academy grounds near Colorado Springs. "A natural for small self-propelled scrapers," you say. Well, Contractor Jones agreed!

9 pay yds vs. 7 or 8

He asked for a series of demonstrations. Four dealers brought out their machines. Three machines had 9 to 9½ yard pans . . . the fourth, a Michigan Model 110, put through its paces by Western Machinery Co. of Denver, heaped 10½ yards. A great many loads were weighed . . . many cycles timed. The winner? Michigan! On both counts! Its greater capacity reflected in greater payloads . . . an average of 9 pay yards per weighed load compared to an average of 7 to 8 pay yards for the other machines. And its torque converter-power shift drive resulted in higher average speeds on the hilly hauls.

Today, Mr. Jones has two Michigan

Model 110's working continually on his big job. They drive everywhere under their own power . . . travel "fast as trucks" over pavement or cross-country from one site to another.

Fast out of cut, up hills

"We're getting some other advantages from the 162 hp Michigans too," says Jones. "They load extremely fast and well . . . with 100-plus hp pusher, at 7,000 ft altitudes, in typical sandy clay material, in only 20 to 45 seconds. They get out of the pit fast. And they're awfully fast on the hauls."



Four-wheel air brakes, power steer permit safe 30 to 35 mph downhill speeds. Uphill loaded, the Michigans averaged 5 to 10 mph.

For more facts, use Request Card at page 18 and circle No. 362

Extra profit, 2 to 3c per yard

"Counting all these things," concludes Jones—"the fast loading, the extra yard or two per load, the fast haul—I'd say these Michigans have boosted production 18 to 20% over what we'd get with other make scrapers in this size and price class. On most of our hauls, that means an extra profit of 2 to 3c per yard!"

The job pictured is typical. Here, the Michigans were leveling a parking lot, carrying material up a 10% grade, then filling low spots near a highway. Average 3,000 ft cycles took 4 minutes. Output per Michigan averaged 135 pay yards per hour.

Sound good? We'd like to *press* Michigans *are* good! Before you buy your next scraper, do what Mr. Jones did—test a Michigan on *your* job, with your own operators. You name the time and place—and the Michigan Scraper you want to see . . . this 10½ yard size, or the bigger 19 or 29 yard models.

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